# CipherLab User Guide

## WR30 D Wearable Ring Scanner

(Setup barcodes included)

Version 2.00d



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## **IMPORTANT NOTICES**

## FOR USA

FEDERAL COMMUNICATIONS COMMISSION INTERFERENCE STATEMENT

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.

#### CAUTION:

Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment.

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.

#### **RF** exposure warning

This device contains transmitters and receivers which emit Radio Frequency (RF) energy. The device is designed to comply with the limits for exposure to RF energy set by the Federal Communications Commission (FCC) of the United States, Industry Canada (IC) of Canada, and the regulating entities of other countries

## FOR CANADA

#### Canada, Industry Canada (IC) Notices

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

(1) This device may not cause interference.

(2) This device must accept any interference, including interference that may cause undesired operation of the device.

#### Canada, avis d'Industry Canada (IC)

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

1. L'appareil ne doit pas produire de brouillage;

L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

#### **Radio Frequency (RF) Exposure Information**

The radiated output power of the Wireless Device is below the Industry Canada (IC) radio frequency exposure limits. The Wireless Device should be used in such a manner such that the potential for human contact during normal operation is minimized.

This device has also been evaluated and shown compliant with the IC RF Exposure limits under mobile exposure conditions. (antennas are greater than 20cm from a person's body).

#### Informations concernant l'exposition aux fréquences radio (RF)

La puissance de sortie émise par l'appareil de sans fil est inférieure à la limite d'exposition aux fréquences radio d'Industry Canada (IC). Utilisez l'appareil de sans fil de façon à minimiser les contacts humains lors du fonctionnement normal.

Ce périphérique a également été évalué et démontré conforme aux limites d'exposition aux RF d'IC dans des conditions d'exposition à des appareils mobiles (antennes sont supérieures à 20 cm à partir du corps d'une personne).

## FOR HAND-HELD PRODUCT WITH RF FUNCTIONS

The WR30 unit (FCC ID: Q3N-WR30D) 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).

## FOR PRODUCT WITH LASER

port. Do not stare into beam.

This laser component

emits FDA / IEC Class 2 laser light at the exit

### SAFETY PRECAUTIONS

CAUTION

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 & 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.

## **RELEASE NOTES**

Version	Date	Notes
2.00d	Feb. 26, 2024	Modify Section of "Specifications" for the classic bluetooth
		Modify the description of note in Section 1.1.2.1
		Add the classic bluetooth description and rearrange Section 2.1
		Add Section 2.2 "BT SPP Slave"
		Add Section 2.3 "BT SPP Master"
		Add new serial commands#@VIBR,nn <cr> and #@ChargStat?<cr> in Appendix II</cr></cr>
1.04	Oct. 31, 2023	Add the description related to the disconnection after restoring system defaults in Section 3.2.2
1.03	Oct. 19, 2023	Modify the LED description about the charging status in Section 1.3 and other related sections
1.02	Sep. 04, 2023	Add Section 2.5 "RS-232 VIA WR30 Dongle(RS232)"
		Modify the description of examples in Section 5.2.2
		Modify Section 3.5.1"Connect to WR30 Dongle"
		Add Section 3.6 "Connect to PC via WR30 Dongle(RS232)"
		Add the description related to device name in Section 3.2.2
		Add the description related to iOS in Section 2.6.5
		Add "WR30 Dongle Setup Barcodes & Serial Commands" in Appendix II
1.01	July 28, 2023	Section 3.5.2: Modify the picture
		Modify the barcodes placed on the footer
		Modify the content at the beginning of the chapter
1.00	July 25, 2023	Initial release

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## **INTRODUCTION**

CipherLab ring 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 ring 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 100 meters and a prolonged battery life to keep business running.

Owing to the slim, ergonomic design, extremely low power consumption, and powerful decoding capability, the ring scanners are the best choice for the following applications -  $% \left( {\left[ {{\left( {{{\left( {{{\left( {{\left( {{\left( {{{\left( {{{\left( {{{\left( {{{\left( {{{\left( {{{\left( {{{\left( {{{\left( {{{}}}} \right)}}} \right.}$ 

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

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

Thank you for choosing CipherLab products!



Update





OVERVIEW OF THE SCANNER





#### INSTALLING THE BATTERY TO THE SCANNER

When you first receive the package, the rechargeable battery is stored separately from the scanner. Install the battery onto the scanner first so that it can be charged when connecting the ring scanner and PC with a USB Type C cable.

Note: Any improper handling may reduce the battery life span.

- I) Hold the ring scanner and gently push the battery into the locking slot of the scanner by aiming the contact pins of the battery at the contact pins of the ring scanner..
- 2) A "Click" sound will be heard to ensure that the battery is secured firmly.
- 3) Hold down the trigger about 3 seconds to turn on the scanner.
- 4) The scanner will respond with a long beep (high tone)and its LED will come on-off shortly.



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



Update

#### CHARGING THE BATTERY VIA THE USB CABLE (FOR DETACHABLE TRIGGER)

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 USB cable, it takes approximately 4 hours to charge the battery to full (from the 5V 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.

- I) Hold the detachable trigger, and buckle its tongue located beneath the trigger button into the groove on top of the scan window (See the places marked in red in Step 1 of the figure below).
- 2) Firmly press this detachable trigger down, and a "Click" sound will be heard to fix it.
- 3) Connect the USB port of the ring scanner to PC or the 5V adaptor for external power using the USB Type C cable.



4) The scanner LED will become solid red during charging.

5) When the charging is done, the red LED will be off. And LED will become solid green. When the charging error occurs, the LED will flash in red color (On/Off ratio 0.25 s: 0.25 s).





## CHARGING THE BATTERY VIA THE USB TYPE-C CHARGER

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 USB cable, it takes approximately 4 hours to charge the battery to full (from the 5V 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.

- Hold the USB TYPE-C charger, and buckle its tongue located beneath the USB-C port into the groove on top of the scan window (See the places marked in red in Step 1 of the figure below).
- 2) Firmly press this USB TYPE-C charger down, and a "Click" sound will be heard to fix it.
- 3) Connect the USB-C port on USB TYPE-C charger to PC or the 5V adaptor for external power using the USB Type C cable.



4) The scanner LED will become solid red during charging.

5) When the charging is done, the red LED will be off. And LED will become solid green.

When the charging error occurs, the LED will flash in red color (On/Off ratio 0.25 s: 0.25 s).





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#### CHARGING THE BATTERY VIA 8-SLOT BATTERY CHARGER

The 8-slot battery charger is optionally provided for charging the battery only. You may purchase the charger separately. It takes within 4 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.

- Connect the DC12 V power supply cord to the power connector of the 8-slot battery I) charger.
- 2) Connect the other end of this power supply cord to a suitable power outlet.
- 3) Slide the battery smoothly into the slot separately.



Status LED		Meaning	
Red, flashing	Green, flashing	Charger is powered ON (LED flashes once in red and green colors (ratio 0.5 s: 0.5 s) for 1 second by turns).	
Red, solid		The battery is being charged.	
	Green, solid	Charging is done.	
Red,		The LED will flash upon the time interval as follows: ■ 1 second: It stands that the temperature is too high or too low (Normal Operation: 0°C ~ 40°C).	
flashing		■ 2 seconds: It stands that an error occurs when charging.	
		■ 3 seconds: It stands that the battery failure or improper contact occurs.	
		4 seconds: It stands that the battery voltage is too high or too low.	



## **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.

- WR30 Wearable Ring Scanner (Main core)
- Ring Trigger (Optional)
- Ambidextrous Hand Mount Strap with Trigger (Optional)
- Detachable Trigger (Optional)
- USB Type-C Charger
- USB Type-C Cable (Optional)
- Adapter (Optional)
- Rechargeable Li-ion battery
- 8-Slot Battery Charger(Optional)
- Retractable Lanyard (Optional)
- Wrist Strip
- WR30 Dongle (Optional)
- WR30 Dongle RS232 (Optional)
- Quick Start Guide

#### 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 Laser Mode, Aiming Mode, and so on
- Programmable feedback via LED indicator, beeper and vibrator
- Beeping tone and duration programmable for Good Read
- With the built-in vibrator that allows the users to know whether the decoding of the scanned barcode succeeds or not by the haptic alert.
- 4 MB flash memory for Memory Mode operation, storing up to 246,723 scans based on EAN-13 barcodes
- Provides up to 10 KB SRAM for reserve buffer while getting out of range over a wireless personal area network (WPAN), storing up to 640 scans based on EAN-13 barcodes



pdate

- Support BLE SPP LITE, BLE HID(HOGP) and USB HID three short-distance wireless data transmission interfaces, which is capable of transmitting scanned data to PC or the mobile device with *Bluetooth®* wireless technology or USB cable.
- > Programmable parameters, including data output format, editing format, symbologies, etc. can be configured by reading the setup barcodes contained in this manual or via the ScanMaster software.



## SYMBOLOGIES SUPPORTED

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

Symbologies Supported: Enable/Disable		Default		
Codabar		Enabled	Enabled	
Code 93		Enabled		
MSI			Disabled	
Code 128	Code 128	Enabled		
	GS1-128 (EAN-128)	Enabled		
	ISBT 128	Enabled		
Code 2 of 5	Industrial 25	Enabled		
	Interleaved 25	Enabled		
	Matrix 25		Disabled	
	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		
	UPC-A Addon 2		Disabled	
	UPC-A Addon 5		Disabled	



Update

GS1 DataBar (RSS)	GS1 DataBar Omnidirectional (RSS-14)	Enabled	
	GS1 DataBar Truncated	Enabled	
	GS1 DataBar Stacked	Enabled	
	GS1 DataBar Stacked Omnidirectional	Enabled	
	GS1 DataBar Limited (RSS Limited)	Enabled	
	GS1 DataBar Expanded (RSS Expanded)	Enabled	
	GS1 DataBar Expanded Stacked	Enabled	
Code 11			Disabled
Composite	Composite CC-A/B		Disabled
Code	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
2 D Symbologies	PDF417	Enabled	
	MicroPDF417		Disabled
	Data Matrix	Enabled	
	Maxicode	Enabled	
	QR Code	Enabled	
	MicroQR	Enabled	
	Aztec	Enabled	



## **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 3 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.

Laberts for Configuring Setting.	Restore User Defaults	Update
	Restore System Defaults	Abort

Note: Refer to Chapter 2 on how to select the output interface.



Update

#### Working Mode

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Upon powering up, the scanner will try to establish a connection with a mobile computer or PC with Bluetooth<sup>®</sup> wireless technology. Refer to <u>Chapter 3 Setting up a WPAN Connection</u> for details. The connection between the scanners and PC or the mobile computer is made easy and reliable.



Note: If USB VCOM CDC is selected as the output interface, the host can directly send serial commands to configure the scanner. For example, run HyperTerminal.exe and type the 6-digit command located under each setup barcode. Refer to Appendix II Host Serial Commands.



## ENTER CONFIGURATION MODE

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

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

Enter Setup



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

## EXIT CONFIGURATION MODE

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

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



### **DEFAULT SETTINGS**

#### SAVE USER SETTINGS AS DEFAULTS

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

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

> Save as User Defaults





Update

#### **RESTORE USER DEFAULTS**

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

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

> Restore User Defaults



#### **RESTORE SYSTEM DEFAULTS**

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

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



Restore System Defaults

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

#### **READ A SETUP BARCODE**

#### **CONFIGURE PARAMETERS**

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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" or "USB HID" is configured as the 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 as Key Type.



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



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

Steps	Action	User Feedback if Successful
1	Power on the scanner	The scanner will respond with a long beep (high tone) and its LED indicator will become solid red and go off quickly.
2	Enter the Configuration Mode	The scanner will respond with six beeps (high-low tone repeats three times), and its LED indicator will be flashing red.
3	Read a Setup barcode For example, Interference of the set of th	The scanner will respond with two beeps (low-high tone) if reading a normal setup barcode.



Update

4 Exit the Configuration Mode...



- 5 The scanner will automatically restart itself...
- \* When any configuration error occurs...

Same as for Power on the scanner.

The scanner will respond with one long beep (low tone).

Same as for Enter the Configuration Mode.



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The example below shows how to set numeric parameters:





Update

The example below shows how to set string parameters:

#### Steps Action User Feedback if Successful 1 Power on the scanner... The scanner will respond with a long beep (high tone) and its LED indicator will become solid red and go off quickly. 2 Enter the Configuration Mode... The scanner will respond with six beeps (high-low tone repeats three times), and Kallere Settions its LED indicator will become flashing red. 3 Read a Setup barcode... The scanner will respond with one short beep if reading a special setup barcode For example, such as "Prefix Code", indicating the setup requires reading more barcodes. Special setup barcodes When "BT HID" or "USB HID" is configured as 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 as Key Type. Refer to Appendix III Read the <u>"Hexadecimal Value"</u> barcodes Hexadecimal barcodes for the desired character string. For example, read "2" and "B" for the scanner to prefix the character "+". Refer to Appendix IV "Hexadecimal System" The scanner will respond with two beeps (low-high tone) when the input values are validated. 4 Exit the Configuration Mode... Same as for Enter the Configuration Mode. Update <u>Abort</u> OR 5 The scanner will automatically restart itself... Same as for Power on the scanner.

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Enter Setup

## LIST THE CURRENT SETTINGS

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

List settings regarding Firmware Version, Serial Number, Interface, Buzzer, and Other Scanner Parameters	List Page 1	
List settings regarding Prefix, Suffix, and Length Code Setting (1/2)	List Page 2	
List settings regarding Prefix, Suffix, and Length Code Setting (2/2)	List Page 3	TIREE-2
List settings regarding Code ID	List Page 4	TIREESI
List settings regarding: Readable Symbologies (1/2)	List Page 5	
List settings regarding: Readable Symbologies (2/2)	List Page 6	TIEEE6
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	





Update

List settings regarding	Illumination Brightness	List Page	10
List settings regarding (1/2)	Editing Format 1	List Page	11
List settings regarding (2/2)	Editing Format 1	List Page	12
List settings regarding (1/2)	Editing Format 2	List Page	13
List settings regarding (2/2)	Editing Format 2	List Page	14
List settings regarding (1/2)	Editing Format 3	List Page	15
List settings regarding (2/2)	Editing Format 3	List Page	16
List settings regarding (1/2)	Editing Format 4	List Page	17
List settings regarding (2/2)	Editing Format 4	List Page	18
List settings regarding (1/2)	Editing Format 5	List Page	19
List settings regarding (2/2)	Editing Format 5	List Page	20



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Enter Setup
Lists settings of Driver License parsing

List Page 22



## **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.

## **1D ONE-SCAN BARCODE**

The requirements of a One-Scan setup barcode are:

- a prefix of the "#@" characters
- the six digits of command parameters
- a suffix of the "# "character
- I) For example, the scanner needs reading three setup barcodes for the command parameter "109952" to take effect:

Enter Setup



2) Now, it requires only one read:





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



Update

## SETUP QR CODE

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

#@CipherLab<u>101231</u>109902<u>109903</u>109994

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

The serial commands above can be combined to form a setup QR barcode:

Setup QR Code for configuring suffix





# Chapter 1

# UNDERSTANDING THE RING SCANNER

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

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## **1.1 BATTERY**

The scanner is powered by a rechargeable 3.85 V/600 mAh Li-ion battery, and it takes approximately 5 hours to charge the battery to full (from the power adaptor). However, the charging time may vary by working condition. For intensive data collection, you may need a spare battery for uninterrupted operation.

Note: The scanner supports power economy. Refer to settings of "Power Economy" as well as "Low Battery Alarm".

## 1.1.1 TURN ON/OFF THE SCANNER

## **TURN ON**

#### Turn on the scanner

After installing the battery, pull down the trigger for about 3 seconds. The scanner will respond with a long beep (high tone), then the LED will become solid red and go off quickly.

## **TURN OFF**

#### Turn off the scanner (automatic)

Let the scanner turn off automatically according to the following section 1.1.2.2 Auto Power Off settings.

#### Turn off the scanner (by pressing the shutdown key)

Press down the shutdown key of the scanner for 15 seconds to turn off the scanner forcibly.

#### Turn off the scanner (by removing the battery)

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

#### Turn off the scanner (by pressing the trigger)

Or you can press down the scanner trigger for a specified time to turn off the scanner. Please enable this function and specify the time.

\*Enable



Disable







By default, the scanner is turned off after you press the trigger for 5 seconds. Have the scanner to

Power Off



## 1.1.2 POWER ECONOMY

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

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



Update

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

## 1.1.2.1 POWER-SAVING

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

- Power-Saving: 1~254 minutes configurable. 0= Disable.
- By default, the scanner stands by at full-speed for 2 minutes after power-on and before entering low-speed mode. If Power-Saving isn't desired, set it to 0 to disable it. Read the setup barcode in the following to achieve the setup.

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

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



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

- 2) Assign the time for the scanner to enter low-speed mode by reading the "Decimal Value" barcode on Appendix IV. For example, read "5" for the scanner to enter low-speed mode after idleness of 5 minutes.
- 3) Read the "Validate" barcode on Appendix IV 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 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,
- (5) the scanner is plugged into the USB cable and is at the charging status.

## 1.1.2.2 AUTO POWER OFF

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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.
  - I. By default, the scanner automatically shuts down 10 minutes after power-on.
  - 2. If Auto Power Off isn't desired, set the parameter to 0 to disable it.
  - 3. When the scan mode is set to Test Mode, you need to enable "Auto Power Off Ignoring Scan Mode" in addition to enabling "Auto Power Off". See the following section Section 1.1.2.3 Auto Power Off Ignoring Scan Mode.



Note 1: When the scanner is set to any scan mode other than Test Mode, you can ignore "Auto Power Off Ignoring Scan Mode".

Note 2 : Auto Power Off does not work while the USB cable is plugged into scanner and in the state of charging .

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 "<u>Decimal Value</u>" barcode on Appendix <u>IV</u>. For example, read "1" and "5" for the scanner to automatically turn off after idleness of 15 minutes.
- 3) Read the "<u>Validate</u>" barcode on Appendix IV to complete this setting.

Note: "Auto Power Off" will not take effect when the scanner is in the configuration mode.

## 1.1.2.3 AUTO POWER OFF IGNORING SCAN 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:

- I) Enable "Auto Power Off" and set a time for the scanner to automatically power off after power-on. See the foregoing section <u>Section 1.1.2.2 Auto Power Off</u>.
- 2) Enable "Auto Power Off Ignoring Scan Mode" by reading the barcode below:

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".

4.



Update

## 1.1.3 POWER ECONOMY VS. WPAN CONNECTION

Before the scanner can communicate with the host computer, WPAN connection (or Bluetooth 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...

- The scanner stays active for a specified period of time (2 minutes by default) for the following 1. 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 HID)
  - (b) trying to connect to the host (BT HID)
- 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 slowly 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.

If it fails to connect again and again, and finally stays inactive until the specified Auto Power 3 Off time elapses, the scanner will automatically turn off in order to conserve battery power.

Pull down the trigger for about 3 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...

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- 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).
- If the scanner stays idle for 2 minutes (default), it will then turn inactive to save power for the 2 remaining period of time (the specified "Auto Power Off" value minus 2 minutes). The CPU runs at low speed, and the LED is slowly 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, the scanner automatically shuts down.
- 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 3 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.



Chapter 1 Defining Output Format

## 1.2 MEMORY

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

## **1.2.1 TRANSMIT BUFFER**

By default, transmit buffer is enabled and for use when the scanner is out of range. Upon reading a barcode successfully within range, the scanner responds with one short beep (high tone) and its LED indicator becomes solid green and goes off quickly. However, the host computer may not receive the data immediately if getting out of range. With the 10 KB transmit buffer, the scanner can ignore the transmission status and keep on reading barcodes until the buffer is full.

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

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

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

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

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

\*Enable



Disable



## CONTINUOUS DECODING

The scanner only proceeds with the next decode after the host computer has successfully received data. In case of transmitting a huge mass of 2D barcode data, users may encounter difficulties in keeping decoding barcodes. Enabling this function can have the scanner keep decoding without waiting for the host to complete the data receiving.

\*Enable





odate

WR30 Ring Scanner User's Guide		
	Disable	
1.2.2 MEMORY MODE		
The scanner keeps 4 MB flash memory fo in memory mode, it means any real-time	or memory mode op connection establis	peration. When the scanner is hed with host is disabled.
	Enable	
	*Disable	
Warning: No real-time connection is allow	ved unless the mem	ory mode is disabled.
Memory Data Delay		
You may set a delay between each data recor	d while transmitting d <b>*None</b>	ata back to the host.
	250 ms	
	500 ms	
	1 sec	
	2 sec	
	3 sec	
30 <b>                                    </b>		nter Setup

	CI	hapter 1	Defining Output Format
	5 sec		
	8 sec		
Send Data			1012-5
The 8 MB flash memory on the scanner can store When it is used up, the scanner will respond with	up to 480,000 s	scans base	ed on EAN-13 barcodes. w tone) as a warning.
You are advised to send data to the host immedia barcode below. It will resume the previous WPAN	tely by having t connection with	he scanne host tem	er read the "Send Data" porarily.
	Send Data		
Clear Data & Confirm			
Even though data has been sent back to the host, erase the memory by having the scanner read tw 1. Read the "Clear Data" barcode to clear the fl 2. Read the "Confirm" barcode to confirm the a	, the flash memo o barcodes – "C ash memory. ction.	ory is still lear Data'	occupied unless you ' and "Confirm".
	Clear Data		1
	Confirm		11 8 11       <b>11 8 1</b> 8 18 1
1.2.3 FREE MEMORY			
You can scan the barcode below to show th percentage terms.	ne available ca	apacity o	f the flash memory in
	Available Mer	nory	
1.2.4 RECORD COUNT OF MEMORY			
You can scan the barcode below to show the	data record co	ount of th	ne flash memory.
	Data Record C of Memory	Count	TIRECE"
			31
	Upda	ate	

# **1.3 LED INDICATOR**

The triple-color LED on top of the scanner is used to provide user feedback. For example, the LED becomes solid red and goes off quickly upon powering on or running out of transmit buffer. You may tell the difference by the beeps - you will hear a long beep of high tone when powering on the scanner, and a long beep of low tone when the transmit buffer becomes full.

Scanner LED			Meaning
Red,			Charging error(On/Off ratio 0.25 s: 0.25 s)
flashing			Configuration Mode (On/Off ratio 0.5 s: 0.5 s)
		Green, solid	The scanner is fully charged.
Red, flashing			Flashing red 5 times indicates low battery when trying to get into download mode. The task is aborted.
Red, flashing			Flashing red (On/Off ratio 0.3 s: 2.5 s) indicates the scanner is inactive and its CPU running at low speed to save power —
			No WPAN connection is established after waiting for two minutes
Red, solid			Charging
Red, on-off			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)
			<ul> <li>Memory full in memory mode, with two short beeps (high-low tone)</li> </ul>
		Green, on-off	Good Read, with one short beep (high tone, LED on for 1 second), and beeper pitch and duration is programmable.
	Blue, flashing		First, flashing blue (On/Off ratio 0.5 s: 0.5 s) for two minutes indicates the scanner is waiting for connection, and goes off if no connection is established, then flashing red (On/Off ratio 0.3 s: 2.5 s) indicates the scanner is inactive.
			It is ready for connection only while the LED is flashing blue —
			HID: trying to connect to host
	Blue, flashing		Flashing blue (On/Off ratio 0.1 s: 0.1 s) indicates the scanner receives a PIN code request from host (flashing more quickly than waiting connection).
	Blue, flashing		Flashing blue (On/Off ratio 0.02 s: 3 s) indicates the scanner has established a WPAN connection successfully.
	Blue, flashing	Green, flashing	Flashing in blue and green colors by turns for 2 seconds (On/Off ratio 0.1 s: 0.1 s) indicate an error occurs while entering the PIN code. Press the trigger to get ready for re-connecting (Default: 2



## Chapter 1 Defining Output Format

		minutes).
	Green, on-off	Press <b>Shutdown key</b> for 3 seconds, and then release for the display of the ring scanner battery power level:
		■G1,G2,G3,G4 LEDs on for 1 second Battery power Level is 80~100%.
		■G1,G2,G3 LEDs on for 1 second Battery power Level is 40~80%
		■G1,G2 LEDs on for 1 second Battery power Level is 20%~40%.
		■G1 LED on for 1 second Battery power Level is lower than 20%.
Red, flashing	Green, flashing	Flashing in red and green colors for 1 second by turns indicates the firmware transmitted to the ring scanner is updating. Wait for 40 seconds around and do not power off the device during the process of this upgrade. The system will restart when the upgrade is completed.

1.3.1 GOOD READ LED

\*Enable Good Read LED



Disable Good Read LED

## 1.3.2 GOOD READ LED DURATION

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

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



- Read the barcode above to specify the time interval before the Good Read LED goes off.
- 2) Read the "<u>Decimal Value</u>" <u>barcode on Appendix IV</u>. For example, read "1" and "5" for the LED to go off after 150 milliseconds.
- 3) Read the "<u>Validate" barcode on Appendix IV</u> to complete this setting.



Update

# 1.4 BEEPER

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

Beeping	Meaning
One long beep, high tone	Power on, with red LED on (1 second) and off quickly
One short beep, high tone	Good Read, with green LED on-off quickly
Programmable, default to 4 KHz	
Six short beeps	Enter Configuration Mode, with red LED flashing
<ul> <li>High-low tone repeats three times</li> </ul>	Exit Configuration Mode
Two short beeps, low-high tone	Read setup barcode successfully
One short beep, high tone	More setup barcode required
	Input PIN code
	Clear PIN code
One short beep, low tone	More barcodes required to complete the "output sequence" requirements of Multi-Barcode Editor, with green LED on-off quickly (Upon completion, same as Good Read.)
One long beep, low tone	Transmit buffer full, with red LED on-off quickly
	Transmit buffer disabled, with red LED on-off quickly
	Configuration error (Wrong barcode)
	PIN code input error
	Reject random PIN request
	Fail to send data in memory mode
Two short beeps, high-low tone	Data saved to buffer when transmit buffer is enabled and the scanner is out of range, with red LED on-off quickly
	Memory Mode – Memory full, with red LED on-off quickly
Two short beeps, high tone	Low Battery Alarm
One short beep then one long beep, high-low tone	Indicates low battery when trying to get into download mode. The task is aborted.
Two long beeps, high-low tone	Multi-Barcode Mode – Buffer full
Three short beeps, tone ascending from low to high	<ul> <li>WPAN connection is established, with blue LED flashing</li> <li>WPAN connection is resumed, with blue LED flashing</li> </ul>
Three short beeps, tone ascending from high to low	WPAN connection is out of range or suspended







\*Low Battery Alarm



No Alarm

Low battery alarm time interval differs depending on the operating status.

Low Battery Alarm Time Interval	Operating Status
1.5 seconds	During scanner operation
10 seconds	The scanner idles for 30 seconds

## 1.4.4 BELL RING

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With this function enabled, the scanner will produce a bell ring when receiving the '0x07' ASCII character which is sent via BLE SPP LITE or USB VCOM CDC interface.



Chapter 1 Defining Output Format

## 1.4.5 POWER-ON BEEP

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

\*Enable

Disable



## 1.5 SEND "NR" TO HOST

You may have the scanner send the "NR" string to the host to notify the No Read event by having the scanner read the following Enable setting barcode in order to activate this function.

Enable

\*Disable



1.6 SCAN MODES

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

Scan Mode	Start to Scan				Stop Scar	nning		
	Always	Press trigger once	Hold trigger	Press trigger twice	Release trigger	Release trigger	Barcode being read	Timeout
Test mode	~							
Laser mode			•			*	✓	✓
Auto Off mode		✓					×	✓
Auto Power Off mode		✓						✓



Update

Aiming mode			~			$\checkmark$	$\checkmark$
(Original)							
Aiming mode		~			√	$\checkmark$	$\checkmark$
(Always Aiming)							
Aiming mode		~			✓	✓	$\checkmark$
(Auto Aiming)							
Multi-Barcode mode		✓			~		
Release Mode				✓		✓	✓

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



Chapter 1 Defining Output Format



### **1.6.4 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 Sections of Section 1.8 Delay between Re-read and Section 1.7 Scanning Timeout.

> Auto Power Off Mode



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

Aiming Mode



1186.962

#### **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 1. default.)
- Read the "Decimal Value" barcode on Appendix IV. For example, read "1" and "0" for the 2. scanner to automatically shut down after idleness of 10 seconds.
- 3. Read the "Validate" barcode on Appendix IV to complete this setting.

#### AIMING SUBMODES

Users can further specify the submode of the aiming mode.

#### **ORIGINAL MODE:**

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

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

\*Original Mode



#### **ALWAYS AIMING:**

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



Chapter 1 Defining Output Format

Always Aiming



## **AUTO AIMING:**

The scanner will be expecting barcodes. Whenever a barcode is brought within range, the scanner starts aiming at the barcode. Then you are supposed to press the trigger to decode the barcode.

Auto Aiming



Note: In case the reader (SE4770/SE5500/SE4750MR) of the ring scanner is in "Aiming Mode" and further specify the submode of the aiming mode as either "Always Aiming" or "Auto Aiming" simultaneously, please protect your eyes from the laser aimer.

1.6.6 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.

> 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 <u>Section 5.6 Multi-Barcode Editor</u>.

1.6.7 RELEASE MODE

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

Note: Refer to Section1.7 Scanning Timeout.

Release Mode



Update

## **1.7 SCANNING TIMEOUT**

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

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

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



- I) Read the barcode above to specify the time interval before the scan engine times out.
- Read the "<u>Decimal Value</u>" barcode on Appendix IV. For example, read "1" and "5" for the scanner to automatically shut down after being idle for 15 seconds.
- 3) Read the "Validate" barcode on Appendix IV to complete this setting.



Enter Setup

# **1.8 DELAY BETWEEN RE-READ**

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

- Auto Power Off mode
- Laser mode (with the Auto-sense function working)





Update

## 1.9 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.



## **1.10 ADDON SECURITY FOR UPC/EAN BARCODES**

The scanner is capable of decoding a mix of UPC/EAN barcodes with and without addons. The read redundancy ( $2\sim16$  times; default is set to 10) 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 (2~16; default:10)



- I) Read the barcode above to specify the read redundancy for UPC/EAN barcodes.
- Read the "<u>Decimal Value</u>" barcode on Appendix IV. For example, read "1" and "2" for the scanner to re-read the barcode for 12 times.
- 3) Read the "<u>Validate" barcode on Appendix IV</u> to complete this setting.
- 44



Enter Setup

# 1.11 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	
	*Disable	
1.12 PICKLIST MODE		
Picklist Mode enables the decoder to decounder the laser aiming pattern.	de only the barcodes	aligned at the center
	Enable	
	*Disable	
1.13 MOBILE PHONE/DISPLAY MODE		
By default this mode is disabled. There i displayed on mobile phones and electronic di	s a big improvement splays when this mode	in reading barcodes is enabled.
	*Disable	
	Enable	



Update

## **1.14 ILLUMINATION BRIGHTNESS**

Users can adjust the illumination brightness of the LED light source. Specify a value ranging from 1 to 10 to set the brightness level which is set to 10 by default meaning 100% illuminated.

Illumination Brightness (1~\*10)



- I) Read the barcode above to commence the adjustment.
- 2) Read the "<u>Decimal Value</u>" barcode on Appendix IV for the desired illumination brightness level.
- 3) Read the "Validate" barcode on Appendix IV to complete the setting.

Note: LED illumination brightness setup only supports SE4107 and SE4750MR readers.

## **1.15 SERIAL NUMBER STAMP**

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

Add serial number in front of data

\*Disable



## 1.15.1 SEPARATOR BETWEEN SERIAL NUMBER STAMP AND DATA

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

> Specify the separator character



- I) Read the barcode above to specify a separator character.
- 2) Read the "<u>Hexadecimal Value</u>" barcode on Appendix IV for the desired character.
- 3) Read the "Validate" barcode on Appendix IV to complete this setting.
- 46



Enter Setup

Chapter 1 Defining Output Format



Besides buzzer and LED, WR30 Ring Scanner, featuring the function of vibrator, also allows the users to know that whether the decoding of the scanned barcode succeeds or not by the haptic alert.

By enabling this vibrator function, the scanner will vibrate upon the time duration you configure in case the barcode is scanned successfully. Howerver, no vibration will be displayed in spite of the scanning result if this function is configured as "Disabled".

To enable or disable this function, users can have the scanner read the setting barcodes below. In addition, you are able to decide that the time duration of scanner's vibration will last by having the scanner read the following setting QR Code you would like.

\*Enable Vibrator



Disable Vibrator

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Update







# **Chapter 2**

# SELECTING OUTPUT INTERFACE

In order to establish a proper WPAN connection between your PC/mobile computer and the scanner, we suggest that you follow these instructions -

- I) Install the battery and hold down the trigger for about 3 seconds to turn on the scanner.
- 2) Have the scanner read the "Enter Setup" 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 the output interfaces supported.

#### Have the scanner read the barcodes for the related settings.

- 4) Have the scanner read the "Update" setup barcode to save the new settings and exit the configuration mode.
- Turn on your PC or mobile computer and establish a bluetooth connection with the scanner. Refer to <u>Chapter 3 – Setting up a WPAN Connection</u> for more details.

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

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Update

# 2.1 BT HID

For BT HID, refer to Chapter 3 - Setting up a WPAN Connection for the related connection settings. No matter the connection is established through BT HID or USB HID, run any text editor on PC or the mobile computer to receive the scanned data sent from WR30 ring scanner.

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



## 2.1.1 ACTIVATE BT HID & SELECT KEYBOARD TYPE

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

Activate BT HID & Select Keyboard Type ...



- I) Read the barcode above to activate BT HID and select a keyboard type.
- Read the "<u>Decimal Value</u>" barcode on <u>Appendix IV</u>. Refer to the table below for the number of desired keyboard type.
- 3) Read the "<u>Validate</u>" barcode on Appendix IV 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)	80	Reserved
65	PCAT (French)	81	PCAT (Greek)
66	PCAT (German)	82	Reserved
67	PCAT (Italy)	83	PCAT (Russian)
68	PCAT (Swedish)	84	Reserved
69	PCAT (Norwegian)	85	Reserved
70	PCAT (UK)	86	Reserved
71	PCAT (Belgium)	87	Reserved
72	PCAT (Spanish)	88	PCAT (Cyrillic)
73	PCAT (Portuguese)	89	PCAT (Armenian)
74	PS55 A01-2 (Japanese)	90	PCAT (Thai)
75	User-defined table	91	PCAT (Slovenian)
76	PCAT (Turkish)	92	PCAT (Mexican Spanish)
77	PCAT (Hungarian)	93	PCAT (Traditional Chinese)
78	PCAT (Swiss German)	94	PCAT (Swiss French)
79	PCAT (Danish)	95	PCAT (Czech)



Update

## 2.1.2 ACTIVATE BLE HOGP HID & SELECT KEYBOARD TYPE

When BLE (Bluetooth Low Energy) HOGP HID interface is activated, you will have to select a keyboard type to complete this setting.

Activate BT HID (HOGP) & Select Keyboard Type



- I) Read the barcode above to activate BLE HOGP HID and select a keyboard type.
- Read the "<u>Decimal Value</u>" barcode on Appendix IV. Refer to the table below for the number of desired keyboard type.
- 3) Read the "<u>Validate</u>" barcode on Appendix IV to complete this setting.

### Keyboard Type

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

No.	Keyboard Type	No.	Keyboard Type
1	PCAT (US)	31	PCAT (Hungarian)
2	PCAT (French)	32	PCAT (Switzerland German)
3	PCAT (German)	33	PCAT (Danish)
4	PCAT (Italian)	35	PCAT (Greek)
5	PCAT (Swedish)	37	PCAT (Russian)
6	PCAT (Norwegian)	42	PCAT (Cyrillic on Russian)
7	PCAT (UK)	43	PCAT (Armenian)
8	PCAT (Belgium)	44	PCAT (Thai)
9	PCAT (Spanish)	45	PCAT (Slovenian)
10	PCAT (Portuguese)	46	PCAT (Mexican Spanish)
12	PS55 A01-2 (Japanese)	48	PCAT (Swiss French)
29	User-defined table	49	PCAT (Czech)
30	PCAT (Turkish)		





Enter Setup

Chapter 2 Selecting Output Interface

## 2.1.3 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. Then, the ring scanner will establish a new connection with another computer equipped with Bluetooth wireless technology.

Reset Connection



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



Update

## 2.1.4 KEYBOARD SETTINGS

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

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

#### **Alphabets Layout**

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



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



Chapter 2 Selecting Output Interface





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

## Capital Lock Type & Setting

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

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

\*Normal

Shift Lock



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

Capital Lock

Capital Lock ON



\*Capital Lock OFF

#### **Alphabets Transmission**

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





Update



#### **Digits Transmission**

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







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 Bluetooth HID is selected as 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:





Update

# 2.1.5 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)



- I) Read the barcode above to specify the inter-character delay.
- 2) Read the "<u>Decimal Value</u>" barcode on Appendix IV for the desired inter-character delay (millisecond).
- 3) Read the "<u>Validate</u>" barcode on Appendix IV to complete this setting.

## 2.1.6 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  $(0x01 \sim 0x1F)$  being transmitted. The longer the delay time is, the slower the transmission speed will be.

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



- I) Read the barcode above to specify the inter-function delay.
- 2) Read the "<u>Decimal Value</u>" <u>barcode on Appendix IV</u> for the desired inter-function delay (millisecond).
- 3) Read the "<u>Validate</u>" barcode on Appendix IV to complete this setting.



# 2.1.7 HID CHARACTER TRANSMIT MODE

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

Batch Processing

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

# 2.1.8 SPECIAL KEYBOARD FEATURE

Users can set the special keyboard feature to "Bypass", "Apply", or "Bypass with Control Character Output" for Windows.

By default, this interface employs the "Bypass" special keybpard defined in <u>Appendix III</u> <u>Keyboard Wedge Table</u> for users may want to get rid of these special codes within the barcodes to avoid data error.

Or you can enable the "Bypass with Control Character Output for Windows" function which can output control characters ranging from 0x01 to 0x1F on the Windows platform. For instance, [Alt]+[029] (GS, group separator) is output after the scanner reads the 0x1D character.

\*Bypass

Apply



Bypass with ControlCharacter Output for Windows



Update

# 2.1.9 KEYBOARD SUPPORT FOR IPHONE/IPAD

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

Show or Hide Keypad



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

Disable



\*Use Trigger Key to 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.

#### 2.1.10 TRANSMIT SPEED

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

Normal



\*Fast



# 2.1.11 SIMPLE PAIRING FOR IPHONE/IPAD (NOT FOR BLE HOGP)

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

Disable	
*Enable	

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

#### 2.1.12 BT HID SLAVE/MASTER SWITCHING (NOT FOR BLE HOGP)

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

Slave



\*Master

# 2.1.13 BT HID AUTO-RECONNECTION (NOT FOR BLE HOGP)

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



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### 2.1.14 UTF-8 CONVERSION

This function, disabled by default, is only for certain keyboard types listed on the table below. Enable this function to get the UTF-8-encoded data.

Enable

\*Disable



BT HID			
No.	Keyboard Type	No.	Keyboard Type
74	PS55 A01-2 (Japanese)	91	PCAT (Slovenian)
81	PCAT (Greek)	92	PCAT (Mexican Spanish)
83	PCAT (Russian)	93	PCAT (Traditional Chinese)
88	PCAT (Cyrillic on Russian)	94	PCAT (Swiss French)
89	PCAT (Armenian)	95	PCAT (Czech)
90	PCAT (Thai)		
BLE HOGP HID			
No.	Keyboard Type	No.	Keyboard Type
12	PS55 A01-2 (Japanese)	44	PCAT (Thai)
35	PCAT (Greek)	45	PCAT (Slovenian)
37	PCAT (Russian)	46	PCAT (Mexican Spanish)
42	PCAT (Cyrillic on Russian)	48	PCAT (Swiss French)
43	PCAT (Armenian)	49	PCAT (Czech)

# TRADITIONAL CHINESE TO MICROSOFT WORD

Generally, there's no problem receiving data in Traditional Chinese and Japanese using kinds of text editor except Microsoft Word. Please enable this function while using Microsoft Word.

Enable

\*Disable



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Note: For Japanese, please enable the Kanji Transmission function beforehand.

# 2.2 BT SPP SLAVE

For BT SPP Slave, refer to <u>Chapter 3 Setting up a WPAN Connection</u> for the related connection settings.

# 2.2.1 ACTIVATE BT SPP SLAVE MODE

Scan this barcode to have the scanner get into SPP Slave Mode.

Activate BT SPP, Slave Mode



# 2.2.2 INTER-FUNCTION DELAY

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

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



- I) Read the barcode above to specify the inter-function delay.
- Read the "<u>Decimal Value</u>" barcode on Appendix IV for the desired inter-function delay (millisecond).
- 3) Read the "<u>Validate" barcode on Appendix IV</u> to complete this setting.

### 2.2.3 ACK/NAK TIMEOUT

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

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



- 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 "<u>Decimal Value</u>" <u>barcode on Appendix IV</u>. For example, read "1" and "0" for the scanner to automatically shut down after being idle for 1 second.
- 3) Read the "<u>Validate</u>" barcode on Appendix IV to complete this setting.



Update



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

# 2.2.4 BT SPP SLAVE HARDWARE FLOW CONTROL

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



# 2.2.5 ACTIVATE BLE SPP LITE MODE

To activate the BLE (Bluetooth Low Energy) SPP Lite interface, please have the scanner read the barcode below.



Activate BLE SPP Lite

Users are supposed to develop their own applications for data transmission between the host (for example, on Android platforms) and the scanner. Please refer to the scanner TX/RX Characteristic UUIDs listed below.

BLE SPP Lite Tx Characteristic UUID	<pre>cc330a40-fb09-11e1-a84d-0002a5d5c51b</pre>
BLE SPP Lite Rx Characteristic UUID	d2127900-f28e-11e2-b778-0800200c9a66



# 2.3 BT SPP MASTER

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

For BT SPP Master, refer to <u>Section 3.3.2 Configure Related Settings (Not For BLE)</u> for the 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 <u>Section 1.1.3 Power Economy vs. WPAN Connection</u>.

## 2.3.1 ACTIVATE BT SPP MASTER MODE

This is SPP Master Mode.

Activate Bluetooth<sup>®</sup> SPP, Master Mode



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

Produce two setup barcodes for the target SPP slave device.

- 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:

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





Update

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

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

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

> Enter MAC ID in Hexadecimal...



Usage:

- 1) Read the barcode above.
- 2) Read the "Hexadecimal Value" barcode on Appendix IV for the desired MAC address.
- 3) Read the "Validate" barcode on Appendix IV to complete this setting.

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

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

Usage:

- 1) Read the "Activate Bluetooth® SPP, Master Mode" barcode above and barcodes for connection settings, such as authentication and preset PIN. Skip this step if no connection settings are desired.
- beep upon reading the barcode.



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

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

#### #@CipherLab886864711662540X00D0176F0030

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

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





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



#### Exit SPP Master Mode

To stop such re-connection, read "Reset Connection" or "Restore System Defaults" barcode so that the current connection record (= MAC ID) will be cleared. Then, the scanner will restart itself automatically. Then, the ring scanner will establish a new connection with another computer equipped with Bluetooth wireless technology.

Reset Connection



# 2.3.2 INTER-FUNCTION DELAY

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

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



- I) Read the barcode above to specify the inter-function delay.
- 2) Read the "<u>Decimal Value</u>" barcode on Appendix IV for the desired inter-function delay (millisecond).
- 3) Read the "<u>Validate</u>" barcode on Appendix IV to complete this setting.



Update

# 2.3.3 ACK/NAK TIMEOUT

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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)



- I) Read the barcode above to specify the time interval for the scanner to send data and wait for a response from the host.
- 2) Read the "Decimal Value" barcode on Appendix IV. 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 Appendix IV to complete this setting.





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 WR30 Dongle.

### 2.3.5 BT SPP MASTER HARDWARE FLOW CONTROL

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

\*Disable

Enable



2.3.6 BT SPP MASTER AUTO-RECONNECTION

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



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# 2.4 DIRECT USB VCOM CDC

If you choose to use the USB VCOM CDC interface, have the ring scanner read the "Activate Direct USB VCOM CDC" barcode below first, then connect one end of the USB cable to the scanner and the other end to the computer. Then, execute HyperTerminal.exe to receive the data sent to the computer.

Note: If it is the first time to use USB VCOM CDC, you are required to install the driver first. Or there is an old version installed, you need to re-install the new version of the driver after removing it

# 2.4.1 ACTIVATE USB VCOM CDC

To enable USB VCOM CDC, please have the scanner read the barcode below.

Activate Direct USB VCOM CDC



#### 2.4.2 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  $(0x01 \sim 0x1F)$  being transmitted. The longer the delay time is, the slower the transmission speed will be.

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



- I) Read the barcode above to specify the inter-function delay.
- Read the "<u>Decimal Value</u>" barcode on Appendix IV for the desired inter-function delay (millisecond).
- 3) Read the "<u>Validate</u>" barcode on Appendix IV to complete this setting.



## 2.4.3 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 0 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 successive attempts fail without any notification, data loss will occur.

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



- I) Read the barcode above to specify the time interval for the scanner to send data and wait for a response from the host.
- 2) Read the "Decimal Value" barcode on Appendix IV. 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 Appendix IV to complete this setting.

ACK/NAK Error Beep

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Enable Error Beep



\*Disable Error Beep

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



# 2.5 DIRECT USB HID

Connect one end of the USB cable to the bottom of the ring scanner and the other end to the computer. The scanner will be able to receive the data sent to PC by executing Notepad.exe on PC.

Items of 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)
Alternate Composing	No

## 2.5.1 ACTIVATE USB HID & SELECT KEYBOARD TYPE

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





- I) Read this barcode above to activate USB HID and select a keyboard type.
- Read the "<u>Decimal Value</u>" barcode on Appendix IV. Refer to the table below for the number of desired keyboard type.
- 3) Read the "<u>Validate</u>" barcode on Appendix IV to complete this setting.



Update

# USB HID Keyboard Type

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

No.	Keyboard Type	No.	Keyboard Type
64	PCAT (US)	80	Reserved
65	PCAT (French)	81	PCAT (Greek)
66	PCAT (German)	82	Reserved
67	PCAT (Italy)	83	PCAT (Russian)
68	PCAT (Swedish)	84	Reserved
69	PCAT (Norwegian)	85	Reserved
70	PCAT (UK)	86	Reserved
71	PCAT (Belgium)	87	Reserved
72	PCAT (Spanish)	88	PCAT (Cyrillic on Russian)
73	PCAT (Portuguese)	89	PCAT (Armenian)
74	PS55 A01-2 (Japanese)	90	PCAT (Thai)
75	User-defined table	91	PCAT (Slovenian)
76	PCAT (Turkish)	92	PCAT (Mexican Spanish)
77	PCAT (Hungarian)	93	Reserved
78	PCAT (Swiss German)	94	PCAT (Swiss French)
79	PCAT (Danish)	95	PCAT (Czech)



# 2.5.2 KEYBOARD SETTINGS

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

### **Alphabets Layout**

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



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







#### **Digits Layout**

By default, the digits layout is set to normal mode. 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 keyboards
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/Shift 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 StateDescriptionCapital Lock OFFAssuming that the status of Caps Lock on the keyboard is OFF,<br/>transmitted characters are exactly the same as in the barcode (when<br/>"case-sensitive" is selected for Alphabets Transmission).Capital Lock ONAssuming that the status of Caps Lock on the keyboard is ON, transmitted<br/>characters are exactly the same as in the barcode (when "case-sensitive"<br/>is selected for Alphabets Transmission).Capital Lock ONAssuming that the status of Caps Lock on the keyboard is ON, transmitted<br/>characters are exactly the same as in the barcode (when "case-sensitive"<br/>is selected for Alphabets Transmission).Nefer to the Caps/Shift Lock Type above.Auto DetectionThe scanner will automatically detect the status of Caps Lock on the

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

Capital Lock ON



\*Capital Lock OFF

#### Alphabets Transmission

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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 Caps/Shift Lock setting. Select [Ignore Case] to have alphabets transmitted according to the status of Caps Lock on the keyboard only.

Ignore Case



\*Case-sensitive





#### **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 BT HID or Direct USB HID is selected as the output interface. By Kanji Transmission, when the host computer is running on Japanese Windows O.S., the Japanese characters of the 2D barcode can be output.

Kanji Transmission is disabled by default. To enable or disable Kanji Transmission, please have the scanner read the following barcodes:

Enable		
	*Disable	
ALT Composing		
By default, Alternate key composing is disabled. of a specific keyboard character. For example, [ "A" regardless the keyboard type you are using	Select [Yes] to Alt] + [065] wil when ALT Comp	allow emulating Alternate key code I be sent to host for the character posing is enabled.
	Yes	
	*No	
82		Enter Setup

### 2.5.3 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)



- I) Read the barcode above to specify the inter-character delay.
- 2) Read the "<u>Decimal Value</u>" barcode on Appendix IV for the desired inter-character delay (millisecond).
- 3) Read the "Validate" barcode on Appendix IV to complete this setting.

# 2.5.4 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  $(0x01 \sim 0x1F)$  being transmitted. The longer the delay time is, the slower the transmission speed will be.

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



- I) Read the barcode above to specify the inter-function delay.
- Read the "<u>Decimal Value</u>" barcode on Appendix IV for the desired inter-function delay (millisecond).
- 3) Read the "Validate" barcode on Appendix IV to complete this setting.

### 2.5.5 HID CHARACTER TRANSMISSION MODE

By default, only one character is transmitted at a time in HID character transmission mode. Read the "Batch Processing" setup barcode below to transmit each data in batches.

Batch Processing



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\*By Character



Note : If you use an iPhone, iPad or Mac to receive the data, please activate the "By Character" function. It is recommended to disable the Auto-Correction function of the iOS keyboard.

#### iOS support

When you have the scanner read the "Batch Processing" barcode to process data in batch, please enable the iOS support function if you use an iPhone, iPad or Mac to receive the data.



# 2.5.6 SPECIAL KEYBOARD

Refer to Section 2.1.8 Special Keyboard Feature.

# 2.5.7 UTF-8 CONVERSION

By default, UTF-8 Conversion is disabled. It only works on the keyboard types listed on the following table.

No.	Keyboard Type	No.	Keyboard Type
81	PCAT (Greek)	91	PCAT (Slovenian)
83	PCAT (Russian)	92	PCAT (Mexican Spanish)
88	PCAT (Cyrillic on Russian)	94	PCAT (Swiss French)
89	PCAT (Armenian)	95	PCAT (Czech)
90	PCAT (Thai)		

Enable

\*Disable



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# 2.6 RS-232 VIA WR30 DONGLE

Connect WR30 Dongle RS232 to the serial port of PC, and connect the 5V DC power supply with the mini-USB port of WR30 Dongle RS232 using the mini-USB cable. To establish a connection bewteen the ring scanner and WR30 Dongle RS232, the associated RS-232 parameters must match those configured on the computer. You may run HyperTerminal.exe on your computer, and the scanned data will be transmitted to the computer.

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

2.6.1 ACTIVATE RS-232 INTERFACE









# 2.6.5 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)



- I) 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 <u>"Decimal Value" barcode on Appendix IV</u>. For example, read "1" and "0" for the scanner to automatically shut down after being idle for 1 second.
- 3) Read the <u>"Validate" barcode on Appendix IV</u> to complete this setting.

ACK/NAK Error Beep

Enable Error Beep



\*Disable Error Beep

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



Update

# 2.7 CONNECT USB HID VIA WR30 DONGLE

For USB HID, connect the scanner via WR30 Dongle to the USB port of PC. Run any text editor(e.g. Notepad.exe) on your computer, and the scanned data will be transmitted to the computer.

Note: The OS on PC only supports Windows 10 or above.

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



# 2.7.1 ACTIVATE USB HID & SELECT KEYBOARD TYPE

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

Activate Remote USB HID & Select Keyboard Type...



- I) Read the barcode above to activate USB HID and select a keyboard type.
- 2) Read the "<u>Decimal Value</u>" barcode on Appendix IV. Refer to the table below for the number of desired keyboard type.
- 3) Read the "Validate" barcode on Appendix IV 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)	80	Reserved
65	PCAT (French)	81	PCAT (Greek)
66	PCAT (German)	82	Reserved
67	PCAT (Italy)	83	PCAT (Russian)
68	PCAT (Swedish)	84	Reserved
69	PCAT (Norwegian)	85	Reserved
70	PCAT (UK)	86	Reserved
71	PCAT (Belgium)	87	Reserved
72	PCAT (Spanish)	88	PCAT (Cyrillic)
73	PCAT (Portuguese)	89	PCAT (Armenian)
74	PS55 A01-2 (Japanese)	90	PCAT (Thai)
75	User-defined table	91	PCAT (Slovenian)
76	PCAT (Turkish)	92	PCAT (Mexican Spanish)
77	PCAT (Hungarian)	94	PCAT (Swiss French)
78	PCAT (Swiss German)	95	PCAT (Czech)
79	PCAT (Danish)		



## 2.7.2 KEYBOARD SETTINGS

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

#### **Alphabets Layout**

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









# **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.

# 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



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	Capital Lock	
Capital Lock State	Description	
Capital Lock OFF	Assuming that the status of Caps Lock on the k transmitted characters are exactly the same as "case-sensitive" is selected for Alphabets Trans	keyboard is OFF, s in the barcode (when smission).
Capital Lock ON	Assuming that the status of Caps Lock on the k characters are exactly the same as in the barco is selected for Alphabets Transmission).	keyboard is ON, transmitted ode (when "case-sensitive"
Auto Detection	The scanner will automatically detect the statu keyboard before data is transmitted; transmitt the same as in the barcode (when "case-sensit Alphabets Transmission).	s of Caps Lock on the ed characters are exactly ive" is selected for

Auto Detect

Capital Lock ON



\*Capital Lock OFF

#### **Alphabets Transmission**

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





\*Case-sensitive





Update



#### **Digits Transmission**

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

Numeric Key



\*Alphanumeric Key





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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 or Remote USB HID via WR30 Dongle is selected as 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:



Update

#### 2.7.3 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)



- I) Read the barcode above to specify the inter-character delay.
- Read the <u>"Decimal Value" barcode on Appendix IV</u> for the desired inter-character delay (millisecond).
- 3) Read the <u>"Validate" barcode on Appendix IV</u> to complete this setting.

#### 2.7.4 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  $(0x01 \sim 0x1F)$  being transmitted. The longer the delay time is, the slower the transmission speed will be.

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



- I) Read the barcode above to specify the inter-function delay.
- Read the <u>"Decimal Value" barcode on Appendix IV</u> for the desired inter-function delay (millisecond).
- 3) Read the <u>"Validate" barcode on Appendix IV</u> to complete this setting.

#### 2.7.5 HID CHARACTER TRANSMIT MODE

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

\*By Character

Batch Processing



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Enter Setup

#### iOS support

When you have the scanner read the "Batch Processing" barcode to process data in batch, please enable the iOS support function if you use an iPhone, iPad or Mac to receive the data.



Update

# 2.8 CONNECT USB VCOM\_CDC VIA WR30 DONGLE

For USB VCOM\_CDC, connect the scanner via WR30 Dongle to the USB port of PC. You may run HyperTerminal.exe on your computer, and the scanned data will be transmitted to the computer.

Note: WR30 Dongle only supports Windows 10 operating system or above.

2.8.1 ACTIVATE USB VCOM\_CDC

Activate Remote USB VCOM\_CDC



#### 2.8.2 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)



- I) Read the barcode above to specify the inter-function delay.
- Read the <u>"Decimal Value" barcode on Appendix IV</u> for the desired inter-function delay (millisecond).
- 3) Read the <u>"Validate" barcode on Appendix IV</u> to complete this setting.

## 2.8.3 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)



- 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 <u>"Decimal Value" barcode on Appendix IV</u>. For example, read "1" and "0" for the scanner to automatically shut down after being idle for 1 second.
- 3) Read the <u>"Validate" barcode on Appendix IV</u> to complete this setting.

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Enter Setup

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

#### 2.8.4 USB VCOM\_CDC VIA WR30 DONGLE AUTO-RECONNECTION

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

\*Auto reconnect immediately

Auto reconnect on data being scanned



Auto reconnect off



Update

# **Chapter 3**

# SETTING UP A WPAN CONNECTION

Transmit Data to Mobile Computer via Bluetooth HID / SPP ...

The scanner can be configured to send data to a mobile computer or PC with  $Bluetooth^{\oplus}$  wireless technology. Upon powering up, the scanner will be ready for establishing a WPAN connection.

# SPP Matter / SPP Slave / SPP Lite Bluetooth HID (BT HID / BLE HOGP)

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

# Transmit Data to PC via Bluetooth HID / SPP ...



Chapter 3 Setting up a WPAN Connection

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

# Transmit Data to PC via WR30 Dongle ...

WR30 Dongle	Remote US8 HD
	Remote USB VCOM_CDC
Interface	Reference
Remote USB HID	2.7 Connect USB HID VIA WR30 Dongle
Remote USB VCOM_CDC	2.8 Connect USB VCOM_CDC VIA WR30 Dongle

# IN THIS CHAPTER

3.1 Connect to THE HID of Mobile Computer via Bluetooth	. 102	
3.2 Connect to BLE SPP LITE of the Mobile Computer via Blu	uetooth 105	5
3.3 Connect to BT HID of PC via Bluetooth Dongle	. 108	
3.4 Enter PIN Code for Authentication	. 114	
3.5 Connect to PC via WR30 Dongle	. 116	
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# **3.1 CONNECT TO THE HID OF MOBILE COMPUTER VIA BLUETOOTH**

# **3.1.1 CHANGE INTERFACE**

To establish a bluetooth connection with the mobile computer for your ring scanner, please follow the procedures listed below to complete the required connection settings:

- D) To enter the configuration mode, please have your ring scanner read the "Enter Setup" setup barcode.
- 2) Have your ring scanner read the setup barcode of the desired interface
  - Activate BT HID (HOGP) & Select Keyboard Type setup barcode (Refer to Section 2.1.2 Activate BLE HOGP HID& Select Keyboard Type).
- 3) Have your ring scanner read the setup barcode of WPAN connection, such as the detection mode, bluetooth pairing, PIN code, and so on.
- 4) Finally, read the "Update" setup barcode to exit the configuration mode.
- 5) Within the specified period of time (default is 2 mins) of the connectable state, the ring scanner must establish a bluetooth connection with PC or the mobile computer. At this time, the CPU is at the full speed and the LED rapidly flashes in blue color (On/Off ratio 0.5 s: 0.5 s). Refer to Sections 1.1.2 Power Economy and 1.1.3 Power Economy vs. WPAN Connection.

Once the ring scanner is out of the effective transmission range, it will response with three short beeps (high-low tone) while the connection is successfully established.

#### 3.1.2 BUILD A CONNECTION WITH THE MOBILE COMPUTER VIA BLUETOOTH

Generally speaking, the connection will be established successfully merely by turning on the bluetooth function of the mobile computer and pairing it with the ring scanner. The process of the pairing and connection may vary slightly upon different operating systems.

#### Procedures of BT HID Connection

By default, the ring scanner uses BT HID and the keyboard type is configured as PCAT (US). If you choose to use BLE SPP LITE and need to switch it back to BT HID later, you must reset to use BT HID and select PCAT (US) or other country's keyboard as the keyboard type.

Refer to the following step-by-step instructions for BT HID pairing and connection. In the following instance, we take RK95 mobile computer for example to demostrate how to establish a bluetooh connection between the ring scanner and the mobile computer.



**STEP 1**. Enable the bluetooth function of the mobile computer by accessing **Settings Connected devices**, and search for the ring scanner device to be connected by tapping on **Pair new device** function.

6.64°, <b>B</b>	12.4	0.41	112 0	*	0193
÷	Connected devices	9.		Bluetooth	٩
8	Bustooth net concerned		>	On	10
51	Cast Not connected			Device name device	
φ	USB Charging this lawers		*	Pair new device	
4	Printing		LaD	Previously connects	ed Devices
	A 18-844 Theorem Con-		. []	Received Nes	
-	Chronwbadk Your phone to retributed to a Chronwbook		٢	Unite pt 78832' to 0	for British
101	Nearby Share Share fast with reactly develop	-			

**STEP 2**. Tap on the searched ring scanner device to be paired, and then you will see a dialog prompt for confirmation. Tap **PAIR** to perform the bluetooth pairing.



Update

STEP 3. Check that whether the device status of this ring scanner is connected or not after the successful pairing.



STEP 4. Now, you are able to scan the barcode and begin sending the data.





# 3.2 CONNECT TO BLE SPP LITE OF THE MOBILE COMPUTER VIA BLUETOOTH

# 3.2.1 CHANGE INTERFACE

Also follow the procedures listed below to complete the required connection settings for the ring scanner's connection with BLE SPP LITE of the mobile computer via Bluetooth.

- I) To enter the configuration mode, please have your ring scanner read the "Enter Setup" setup barcode.
- 2) Have your ring scanner read the setup barcode of the desired interface
  - Activate BLE SPP LITE
- 3) Have your ring scanner read the setup barcode of WPAN connection, such as the detection mode, bluetooth pairing, PIN code, and so on.
- 4) Finally, read the "Update" setup barcode to exit the configuration mode.
- 5) Within the specified period of time (default is 2 mins) of the connectable state, the ring scanner must establish a bluetooth connection with PC or the mobile computer. At this time, the CPU is at the full speed and the LED rapidly flashes in blue color (On/Off ratio 0.5 s: 0.5 s). Refer to Sections <u>1.1.2 Power Economy</u> and <u>1.1.3 Power Economy vs. WPAN Connection</u>.

Once the ring scanner is out of the effective transmission range, it will response with three short beeps (high-low tone) while the connection is successfully established.

# 3.2.2 SCAN QR CODE TO CONNECT WITH A MOBILE COMPUTER VIA BLUETOOTH

Install the **Intelliworker** App provided by CipherLab on the mobile computer beforehand. Launch this app and have the ring scanner read the dedicated QR Code "Scan to Pair" in order to establish the bluetooth connection between the ring scanner and PC or a mobile computer.

# Procedures of BLE SPP LITE Connection

By default, the ring scanner uses BT HID and the keyboard type is configured as PCAT (US). If you choose to use BLE SPP LITE and need to switch it back to BT HID later, you must reset to use BT HID and select PCAT (US) or other country's keyboard as the keyboard type.

To switch from BLE SPP LITE back to BT HID pairing and connection, refer to <u>Section 3.1.1"Change</u> <u>Interface</u>" for the details.

A random eight-code alphanumeric characters (0-9, A-Z) will be generated by **Intelliworker** App. After having your ring scanner read the dedicated "Scan to Pair" QR Code of this App , the bluetooth device name belonging to this ring scanner will be changed as the one (e.g. X8YIQBPG) specified by the QR Code. The mobile computer will actively search for the scanner named "X8YIQBPG", and establish a bluetooth connection with this ring scanner.

For Example, #@NAME=X8YIQBPG



pdate

WR30 Ring Scanner User's Guide



To reset WR30 ring scanner back to the default device name and disconnect the connection between the ring scanner and the mobile computer, please press the **Disconnect** button on the start-up screen of **Intelliworker** App before scanning the <u>Restore System Defaults</u> barcode.





#### 3.2.3 BUILD A BLUETOOTH CONNECTION WITH THE MOBILE COMPUTER THROUGH NFC

Launch **CipherLab Intelliworker** App installed on the mobile computer, and enable the bluetooth as well as NFC sensing functions of the mobile computer. Through the "Tap To Pair" screen of the **Intelliworker** App on the mobile computer, the scanner will pair with the mobile computer and successfully establish the bluetooth connection between them.

Procedures of BLE SPP LITE Pairing and Connection through NFC

STEP 1. Enable both the bluetooth and NFC functions of the mobile computer.

**STEP 2.** Now, place the bottom of the ring scanner close to the "Tap To Pair" screen of the **Intelliworker** App within 1 cm. The ring scanner will respond with one beep and its connection status will be changed into "Device Connected" in case the bluetooth connection is established successfully.



Update

# **3.3 CONNECT TO BT HID OF PC VIA BLUETOOTH DONGLE**

# **3.3.1 CHANGE INTERFACE**

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To establish a bluetooth connection with the computer for your ring scanner, please follow the procedures listed below to complete the required connection settings :

- To enter the configuration mode, please have your ring scanner read the "Enter I) Setup" setup barcode.
- 2) Have your ring scanner read the setup barcode of the desired interface
  - . Activate BT HID & Select Keyboard Type setup barcode (Refer to Section 2.1.1 Activate BT HID & Select Keyboard Type).
- 3) Have your ring scanner read the setup barcode of WPAN connection, such as the detection mode, bluetooth pairing, PIN code, and so on.
- 4) Finally, read the "Update" setup barcode to exit the configuration mode.
- 5) Within the specified period of time (default is 2 mins) of the connectable state, the ring scanner must establish a bluetooth connection with PC or the mobile computer. At this time, the CPU is at the full speed and the LED rapidly flashes in blue color (On/Off ratio 0.5 s: 0.5 s). Refer to Sections 1.1.2 Power Economy and 1.1.3 Power Economy vs. WPAN Connection.

Once the ring scanner is out of the effective transmission range, it will response with three short beeps (high-low tone) while the connection is successfully established.



Chapter 3 Setting up a WPAN Connection

#### 3.3.2 CONFIGURE RELATED SETTINGS (NOT FOR BLE)

#### 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



Note: When connecting more than two scanners to a notebook computer or PDA with  $Bluetooth^{\oplus}$  wireless technology, we suggest that you disable the power-saving setting for a more reliable connection.

#### **Device Name Broadcasting**

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

\*Enable

Disable



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

#### **Changing Device Name**

By default, the device name (local hostname) combines the model name with serial number (for example, WR30BH3000001). Users are allowed to configure the device name with length up to 13 bytes.

Change Bluetooth Local Hostname



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Update

- I) Read the barcode above to configure the device name.
- 2) Read the "Hexadecimal Value" barcode on Appendix IV for the desired character string.
- 3) Read the "Validate" barcode on Appendix IV to complete this setting.

#### Secure Simple Pairing (SSP)

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

Disable



\*Enable



Chapter 3 Setting up a WPAN Connection

#### 3.3.3 BUILD A CONNECTION USING BLUETOOTH DONGLE

Generally speaking, just follow the instructions provided by the wizard of PC, a bluetooth connection between the ring scanner and PC can be established successfully after the pairing. The process of the pairing and connection may vary slightly upon the application you use.

If the operation system of your PC is Microsoft® Windows® 10, you can proceed the pairing and connection by adding a new bluetooth device through the built-in wizard. You can use the application provided by the manufacturer of bluetooth dongles as well.

#### Procedures of BT HID Connection

By default, the ring scanner uses BT HID and the keyboard type is configured as PCAT (US). If you choose to use BLE SPP LITE and need to switch it back to BT HID later, you must reset to use BT HID and select PCAT (US) or other country's keyboard as the keyboard type.

For BT HID pairing and connection, refer to the step-by-step instructions listed below. In the folloing instance, we take Windows 10 operation system for example to demonstrate how to establish a bluetooth connection between PC and the ring scanner.

# STEP 1. Go to Start→Setup→Device, and then the "Bluetooth & other devices"

window will appear(see the figure below). Enable the bluetooth function and click button to add a new bluetooth device.

Blue both & other devices	
4 Samuels of characters	
Autorit C Da	
Non-Kumeralm or Talkinister	
Mouse, keyboard, & pm	
2024002340/0000004) Parenti	
C Mith Optime Mount	
Shoe with uture to connect using Self Rev	
When articles, you can connect by suggested Marinelli desire assetty when they're show by not requiring result.	
Dominal inst meteral constition	
To help present robot charges, they fits of an income private titrate,	



Update

# WR30 Ring Scanner User's Guide

STEP 2. Then, a pop-up window as the figure below will be shown. PC will start to search for the surrounding bluetooth device(s) when selecting **Bluetooth** option.



STEP 3. Click on the searched Ring Scanner to be paired.





**STEP 4.** A message of "Your device is ready to go" will be shown if PC pairs with the ring scanner and the bluetooth connection is established successfully.

Add a Central	
Your device is ready to go!	
623 Kina Samar	
	Fere a

STEP 5. The device status of ring scanner will show "Connected" after the bluetooth connection is established successfully. And the scanner is ready to scan the barcode and send the data.

Bluetooth & other devices	
The Add Durnals of other during	
Bushash D Se	
Non-Manuscription of "Originalization	
Mouse, keybuard, & pen	
C Al-Sheet Masse	<b>80</b> 305
Contraction of the second	80 610
C Ull Calculate Massee	
Other devices	
C PANAL NO - HA	
D VIIIS-OW	



WR30 Ring Scanner User's Guide

# **3.4 ENTER PIN CODE FOR AUTHENTICATION**

3.4.1 USE JUST WORKS

I) In the configuration mode, read the "Use Just Works" barcode below.

\*Use Just Works



2) Configure the scanner as Just Works mode, and begin to search for the scanner on PC or the mobile phone. Click on this searched scanner, PC or the mobile phone will automatically pair with it without entering a PIN code.

# **3.4.2 USE PRESET PIN**

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

Use Preset PIN



2) Read the barcode below to specify the PIN code, in decimal. By default, the PIN code is set to "000000". Only 6-digit fixed length is allowed.

> Enter PIN in Decimal...



3) On Appendix IV, read the "Decimal Value" barcode for the desired digits. Read the "Clear PIN Code" barcode first if you need to re-input the PIN code.

Clear PIN Code



4) Read the "Validate" barcode on Appendix IV to complete this setting.

Note: WR30 Preset PIN only supports Windows 10 and iOS operation system. It is recommend to choose Just Works or Random to proceed with the pairing with Android mobile computer or mobile phone.



Chapter 3 Setting up a WPAN Connection

#### 3.4.3 USE RANDOM PIN

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

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 "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!

Read the barcode below to specify the PIN code, in decimal. 1.



2. On Appendix IV, read the "Decimal Value" barcode for the desired digits. Read the "Clear PIN Code" barcode first if you need to re-input the PIN.

Clear PIN Code

Enter PIN in Decimal



3. Read the "Validate" barcode on Appendix IV 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.

# 3.4.4 USE OOB (OUT OF BAND) THROUGH NFC

With the built-in OOB pairing mode, and the ring scanner requires no additional settings.

Enable the bluetooth and NFC sensing functions of the Android mobile device equipped with OOB pairing capability, and then place the Android mobile device close to the NFC antenna of the ring scanner. The bluetooth connection and pairing will be established automatically.



# 3.5 CONNECT TO PC VIA WR30 DONGLE

By default, the interface of WR30 Dongle is set to "USB HID". Please connect WR30 Dongle to the USB port of PC.

Note: WR30 Dongle only supports Windows 10 operating system or above.

# 3.5.1 CONNECT TO WR30 DONGLE

#### By scanning the setting barcode

Connect the ring scanner to WR30 Dongle by reading the setup barcode label in the back of WR30 Dongle. The scanner will rapidly build a connection with WR30 Dongle.

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> The format of CrAdLe setting barcode can be supported: 2D (Data Matrix)

Read the setting barcode (XXXXXXXXXXX stands for the MAC address of WR30 Dongle). The scanner will respond with one beep to indicate that the reading of this barcode is successful, the scanner will stay active for a specified period of time (2 minutes by default) trying to connect to WR30 Dongle while its LED is flashing blue (On/Off ratio 0.5 s: 0.5 s).

Once connected, the scanner will respond with three beeps (tone ascending from low to high), and the LED flashes blue (On/Off ratio 0.02 s: 3 s). When the ring scanner is out of the effective transmission range, the scanner will respond with three short beeps (tone descending from high to low).

To obtain the MAC address of WR30 Dongle, the usage is as follows:

If the setup barcode label on WR30 Dongle is illegible or missing, the users can obtain the MAC address of this dongle by pressing the button on it for around 3 seconds in order to produce a single 2D setup barcode.



Enter Setup

## 3.5.2 CHANGE WR30 DONGLE INTERFACE

If you would like to change the interface of WR30 Dongle, use one of the scanners to configure the interface-related settings and it will pass the new settings to WR30 Dongle, which will then initialize and pass the settings to any other connected scanners.

- Have all scanners read the "Set Connection" and "Serial Number" labels of WR30 Dongle.
- Connect WR30 Dongle to the USB port of PC. (Note: WR30 Dongle only supports Windows 10 operating system or above).
- 3) The scanners will connect to your computer via WR30 Dongle.
- Have one scanner read the "Enter Setup" setup barcode to enter the configuration mode.
- 5) Have this scanner read the desired interface barcode and configure its related settings -
  - ▶ Activate Remote USB HID & Select Keyboard Type setup barcode (Refer to 2.5.1 般 用USB HID 並選擇 Section 2.7.1 Activate USB HID & Select Keyboard Type).
  - ▶ <u>Activate Remote USB Virtual-COM\_CDC</u> setup barcode (Refer to <u>2.6.1 般用\_USB</u> <u>Virtual-GSection 2.8.1 Activate USB Virtual-COM\_CDC</u>).
- 6) Have this scanner read the "Update" setup barcode to exit the configuration mode.
- After this scanner resumes connection with WR30 Dongle, it will pass the interface-related settings to WR30 Dongle.
- 8) Upon receipt of the new settings, WR30 Dongle will initialize itself.
- Updated with new settings, WR30 Dongle will pass these settings to other connected scanners.



Update

格式化:預設段落字型

# WR30 Ring Scanner User's Guide





# 3.6 CONNECT TO PC VIA WR30 DONGLE(RS232)

The interface of WR30 Dongle RS232 is set to "RS232". Please connect WR30 Dongle RS232 to the serial port of PC.

3.6.1 CONNECT TO WR30 DONGLE (RS232)

#### By scanning the setting barcode

Connect the ring scanner to WR30 Dongle RS232 by reading the setup barcode label in the back of WR30 Dongle RS232. The scanner will rapidly build a connection with WR30 Dongle RS232.

- > The format of SeTcOn setting barcode can be supported: 2D (QR Code)

Read this setting barcode (XXXXXXXXXX stands for the MAC address of WR30 Dongle RS232). The scanner will respond with one beep to indicate that the reading of this barcode is successful, the scanner will stay active for a specified period of time (2 minutes by default) trying to connect to WR30 Dongle RS232 while its LED is flashing blue (On/Off ratio 0.5 s: 0.5 s).

Once connected, the scanner will respond with three beeps (tone ascending from low to high), and the LED flashes blue (On/Off ratio 0.02 s: 3 s). When the ring scanner is out of the effective transmission range, the scanner will respond with three short beeps (tone descending from high to low). A WR30 Dongle RS232 only can simultaneously connect with a set of ring scanner.



Update

# Chapter 4

# CHANGING SYMBOLOGY SETTINGS

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

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Chapter 4 Changing Symbology Settings

4.1 CODABAR		
Decide whether to decode Codabar.		
	*Enable	
		118CO:1
	Disable	
		118602
4.1.1 START/STOP TRANSMISSION		
Decide whether to include the start/stop cha	aracters in the data beir	ng transmitted.
	<b>m</b>	
	Transmit Start/Stop Characters	
	*Do Not Transmit	
		7186-11
4.1.2 CLSI CONVERSION		
When enabled, the CLSI editing strips the s the first, fifth, and tenth characters of a 14-	tart/stop characters an character Codabar barc	d inserts a space after ode.
	ApplyCISIEditing	
	Appry Chor Barting	
	the Net Apply	
	-DO NOC APPLY	
Note: The 14-character barcode length doe	s not include start/stop	characters.

4.1.3 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.



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- 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.

> \*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.





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

- 3) Read the <u>"Decimal Value" barcode on Appendix IV</u> for the desired length.
- 4) Read the <u>"Validate" barcode on Appendix IV</u> to complete this setting.



Enter Setup

Chapter 4 Changing Symbology Settings







Do Not Transmit

#### 4.3.3 CONVERT TO EAN-13

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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.

Enter Setup

Chapter 4 Changing Symbology Settings

• "Verify Check Digit" must be disabled.

Convert to EAN-13

\*Do Not Convert



# 4.3.4 CODE LENGTH QUALIFICATION

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

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

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

 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)...

 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 <u>"Decimal Value" barcode on Appendix IV</u> for the desired length.
- 4) Read the <u>"Validate" barcode on Appendix IV</u> to complete this setting.



Update

WR30 Ring Scanner User's Guide



• 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.

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Enter Setup

Chapter 4 Changing Symbology Settings

\*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



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- 3) Read the <u>"Decimal Value" barcode on Appendix IV</u> for the desired length.
- 4) Read the <u>"Validate" barcode on Appendix IV to complete this setting.</u>



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WR30 Ring Scanner User's Guide		
4.5 CODE 25 - CHINESE 25		
Decide whether to decode Chinese 25.		
	Enable	
	*Disable	
4.6 ITALIAN PHARMACODE (CODE 32)		
Decide whether to decode Italian Pharmaco	de.	
	Enable	
	*Disable	
Note: Code 39 must be enabled first.		
4.7 CODE 39		
Decide whether to decode Code 39.		
	*Enable	
	Disable	
4.7.1 VERIFY CHECK DIGIT		
Decide whether to verify the check digit. If	incorrect, the barcode	will not be accepted.
128		
	Enter	Setup


### 4.7.4 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.

 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)...



 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 <u>"Decimal Value" barcode on Appendix IV</u> for the desired length.
- 4) Read the <u>"Validate" barcode on Appendix IV</u> to complete this setting.



# 4.8 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. 4.9 CODE 93 Decide whether to decode Code 93. \*Enable Disable 1000

## 4.9.1 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.

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



Update

\*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

- 3) Read the <u>"Decimal Value" barcode on Appendix IV</u> for the desired length.
- 4) Read the <u>"Validate" barcode on Appendix IV</u> to complete this setting.



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4.10 CODE 128		
Decide whether to decode Code 128.		
	*Enable	
	Disable	
4.11 GS1-128 (EAN-128)		
Decide whether to decode GS1-128.		
	*Enable	
	Disable	
Note: GS1-128 barcodes can be decoded of	nly when this setting is	enabled.
4.11.1 TRANSMIT CODE ID		
Decide whether to include the Code ID ("]c:	1") in the data being tra	insmitted.
	Transmit GS1-128 Code ID	
	*Do Not Transmit	
4.11.2 FIELD SEPARATOR (GS CHARACTER)		
Decide whether to apply a field separator (t readable character).	o convert the FNC1 cont	rol character to human



Enable Field Separator…



- I) Read the barcode above to enable field separator.
- 2) Read the <u>"Hexadecimal Value" barcode on Appendix IV</u> for the desired character string.
- 3) Read the <u>"Validate" barcode on Appendix IV</u> to complete this setting.

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

#### 4.11.3 GS1 FORMATTING

Decide whether to enable GS1 formatting for GS1-128. When enabled, code ID transmitting will be disabled; however, the field separator and application ID mark characters will be automatically added to the output data.

Enable GS1 Formatting



\*Disable GS1 Formatting

You may want to add an application ID mark (1 character long) to the left (AlMark1) or right (AlMark2) of an application ID (Al) for the purpose of labeling it when formatting the GS1 data.



AIMark2

ATMark1

- Read the barcode above to add a mark to the left (AIMark1)/right (AIMark2) of an application ID.
- 2) Read the <u>"Hexadecimal Value" barcode on Appendix IV</u> for the desired character. Read '00' if you want to remove the AI mark.
- 3) Read the <u>"Validate" barcode on Appendix IV</u> to complete this setting.

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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



Update

## 4.12.2 ISBT CONCATENATION REDUNDANCY

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

ISBT Concatenation Redundancy 2~20 (\*10)



- I) Read the barcode above to specify the concatenation redundancy.
- 2) Read the <u>"Decimal Value" barcode on Appendix IV</u> for the desired redundancy.
- 3) Read the <u>"Validate" barcode on Appendix IV</u> to complete this setting.



4.13 GS1 DATABAR (RSS FAMILY)		
It is categorized into three groups:		
Group I – GS1 DataBar Omnidirectional (RSS-14)		
This group consists of the following:	<ul> <li>GS1 DataBar Omnidirectional</li> <li>GS1 DataBar Truncated</li> <li>GS1 DataBar Stacked</li> <li>GS1 DataBar Stacked Omnidirectional</li> </ul>	
Group II – GS1 DataBar Expanded (RSS Expanded)		
This group consists of the following:	<ul><li>GS1 DataBar Expar</li><li>GS1 DataBar Expar</li></ul>	nded nded Stacked
Group III – GS1 DataBar Limited (RSS Limited)		
This group consists of the following:	GS1 DataBar Limite	ed
4.13.1 SELECT CODE ID		
Select a desired Code ID to use: • "]e0" (GS1 DataBar Code ID) • "]c1" (GS1-128 Code ID) 4 13 2 GS1 DATABAR OMNIDIRECTIONAL (RSS-1)	Use "]C1″ *Use "]e0″	THEFT:
4.13.2 GS1 DATABAR UMINIDIRECTIONAL (RSS-1	L4)	
	*Enable RSS-14 & RSS Expanded (Groups I, II) Disable	
	Update	137

When GS1 formatting for GS1 DataBar Omnidirectional is enabled, code ID transmitting will be disabled; however, application ID transmitting will be enabled automatically. 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



Decide whether to enable GS1 formatting for GS1 DataBar Omnidirectional. When enabled, the field separator and application ID mark characters will be automatically added to the output data.

Enable GS1 Formatting



110/1P.

\*Disable GS1 Formatting









Enable GS1 Formatting



\*Disable GS1 Formatting

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## 4.13.5 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

## 4.13.6 FIELD SEPARATOR (GS CHARACTER)

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

Specify Field Separator...



- I) Read the barcode above to specify field separator.
- 2) Read the <u>"Hexadecimal Value" barcode on Appendix IV</u> for the desired character string.
- 3) Read the <u>"Validate" barcode on Appendix IV</u> to complete this setting.



Update

### 4.13.7 APPLICATION ID MARK

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



- Read the barcode above to add a mark to the left (AIMark1)/right (AIMark2) of an application ID.
- 2) Read the <u>"Hexadecimal Value" barcode on Appendix IV</u> for the desired character. Read '00' if you want to remove the AI mark.
- 3) Read the <u>"Validate" barcode on Appendix IV</u> to complete this setting.



4.14 MSI		
Decide whether to decode MSI.	Enable	
	*Disable	
4.14.1 VERITY CHECK DIGIT		
Select one of the three calculations to veri incorrect, the barcode will not be accepted.	fy check digit(s) when	decoding barcodes. If
	*Single Modulo 10	
	Double Modulo 10	
	Modulo 10 & 11	
4.14.2 TRANSMIT CHECK DIGIT		
Decide whether to include the check digit(s)	in the data being trans	smitted.
	*Last Digit Not Transmitted	
	Both Digits Transmitted	
	Both Digits Not Transmitted	



## 4.14.3 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.

 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)...



 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 <u>"Decimal Value" barcode on Appendix IV</u> for the desired length.

4) Read the <u>"Validate" barcode on Appendix IV</u> to complete this setting.



4.15 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	
4.15.1 TRANSMIT CHECK DIGIT		
Decide whether to include the check digit i	n the data being transn	nitted.
	*Transmit EAN-8 Check Digit	
	Do Not Transmit	
<b></b>		145
	Update	



\*Disable



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

EAN-13 378/379 Addon Mode

\*Disable

Enable

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

EAN-13 977 Addon Mode

Enable



\*Disable

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

#### EAN-13 978 Addon Mode

Enable



\*Disable

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



Update

EAN-13 979 Addon Mode Enable \*Disable 10.67 Decide whether to enable EAN-13 491 Addon Mode. When enabled, barcodes starting with 491 won't be decoded if the scanned barcodes do not have the Addon 2 or Addon 5 suffix. EAN-13 491 Addon Mode Enable \*Disable Decide whether to enable EAN-13 529 Addon Mode. When enabled, barcodes starting with 529 won't be decoded if the scanned barcodes do not have the Addon 2 or Addon 5 suffix. EAN-13 529 Addon Mode Enable \*Disable **JIN.**F.H Decide whether to have the scanner buzzer sound two beeps (with tones descending from high to low) when decoding the scanned barcode that doesn't have the Addon 2 or Addon 5 suffix.

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FAN-13 Addon Mode Buzzer		
	Enable	
	*Disable	
4.16.2 CONVERT TO ISBN		
Decide whether to convert the EAN-13 barce	ode, starting with 978 a	and 979, to ISBN.
	Convert EAN-13 to ISBN	
	*Do Not Convert	
4.16.3 CONVERT TO ISSN		
Decide whether to convert the EAN-13 barce	ode, starting with 977 t	o ISSN.
	Convert EAN-13 to ISSN	
	*Do Not Convert	110F1F
4.16.4 TRANSMIT CHECK DIGIT		
Decide whether to include the check digit in	the data being transmi	tted.
	*Transmit EAN-13 Check Digit	
	Update	149







## **4.19.1 SELECT SYSTEM NUMBER**

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

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







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

4.19.2 CONVERT TO UPC-A

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

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

	Convert UPC-E to UPC-A *Do Not Convert	100657 100657 100657 100656
4.19.3 TRANSMIT SYSTEM NUMBER		

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

Transmit UPC-E System Number



\*Do Not Transmit

## 4.19.4 TRANSMIT CHECK DIGIT

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

\*Transmit UPC-E Check Digit



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Update

Do Not Transmit







Update

## 4.20.3 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.

 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)...



 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 <u>"Decimal Value" barcode on Appendix IV</u> for the desired length.
- 4) Read the <u>"Validate" barcode on Appendix IV</u> to complete this setting.

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## 4.21.3 COMPOSITE TLC-39

Decide whether to enable Composite TLC-39.

<b> </b>        <b> </b>      r		

10/02

4.21.4 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

Enable Composite

TLC-39

\*Disable

\*UPC Always Linked



Auto-discriminate





## 4.21.5 GS1-128 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

\*Disable



## 4.21.6 FIELD SEPARATOR (GS CHARACTER)

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

Specify Field Separator...



- I) Read the barcode above to specify field separator.
- 2) Read the <u>"Hexadecimal Value" barcode on Appendix IV</u> for the desired character string.
- 3) Read the <u>"Validate" barcode on Appendix IV</u> to complete this setting.

## 4.21.7 APPLICATION ID MARK

You may want to add an application ID mark (1 character long) to the left (AIMark1) or right (AIMark2) of an application ID (AI) for the purpose of labeling it when formatting the GS1 data. The application ID mark is automatically added to the data when GS1 formatting is enabled.

AIMark1



AIMark2

- Read the barcode above to add a mark to the left (AlMark1)/right (AlMark2) of an application ID.
- 2) Read the <u>"Hexadecimal System" barcode on Appendix IV</u> for the desired character. Read '00' if you want to remove the AI mark.
- 3) Read the <u>"Validate" barcode on Appendix IV</u> to complete this setting.



WR30 Ring Scanner User's Guide		
4.22 US POSTAL CODE		
4.22.1 US POSTNET		
Decide whether to decode US Postnet.	*Enable US Postnet Disable	110410
4.22.2 US PLANET		
Decide whether to decode US Planet.	*Enable US Planet	
	Disable	
4.22.3 TRANSMIT CHECK DIGIT		
Decide whether to include the check digit in	the data being transm	itted.
	*Transmit US Postal Check Digit	
	Do Not Transmit	
160	Enter	Setup



Update

## 4.24.2 AUSTRALIAN POSTAL

Decide whether to decode Australian Postal.

\*Enable Australian Postal

Disable



4.24.3 DUTCH POSTAL

Decide whether to decode Dutch Postal.

\*Enable Dutch Postal

Disable



110

## 4.24.4 USPS 4CB/ONE CODE/INTELLIGENT MAIL

Decide whether to decode USPS 4CB/One Code/Intelligent Mail.

Enable USPS 4CB/ One Code/ Intelligent Mail

\*Disable



4.24.5 UPU FICS POSTAL

Decide whether to decode UPU FICS Postal.

Enable UPU FICS Postal



\*Disable

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\*Disable



#### FIELD SEPARATOR

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

Specify Field Separator...



- I) Read the barcode above to specify field separator.
- 2) Read the "<u>Hexadecimal Value</u>" barcode on Appendix IV for the desired character string.
- 3) Read the "Validate" barcode on Appendix IV to complete this setting.

#### APPLICATION ID MARK

You may want to add an application ID mark (1 character long) to the left (AlMark1) or right (AlMark2) of an application ID (Al) for the purpose of labeling it when formatting the GS1 data.



- application ID.
- 2) Read the "<u>Hexadecimal Value</u>" barcode on Appendix IV for the desired character. Read '00' if you want to remove the AI mark.
- 3) Read the "<u>Validate" barcode on Appendix IV</u> to complete this setting.


Chapter 4 Changing Symbology Settings



\*Disable



FIELD SEPARATOR (GS CHARACTER)

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

Specify Field Separator...



- I) Read the barcode above to specify field separator.
- 2) Read the "<u>Hexadecimal Value</u>" barcode on Appendix IV for the desired character string.
- 3) Read the "Validate" barcode on Appendix IV to complete this setting.

#### APPLICATION ID MARK

You may want to add an application ID mark (1 character long) to the left (AlMark1) or right (AlMark2) of an application ID (AI) for the purpose of labeling it when formatting the GS1 data.



- Read the "<u>Hexadecimal Value</u>" barcode on Appendix IV for the desired character. Read '00' if you want to remove the AI mark.
- 3) Read the "Validate" barcode on Appendix IV to complete this setting.



Chapter 4 Changing Symbology Settings



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# 4.26 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!

#### 4.26.1 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

Transmit Any Symbol in Set / No Particular Order

\*Passthrough All Symbols



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Enter Setup

Chapter 4 Changing Symbology Settings

4.26.2 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.

GLI Protocol

\*None



## 4.26.3 TRANSMIT CONTROL HEADER

The control header contains the segment index and file ID. For example, the field may be "92800000725120343". The five digits after the 928 are the segment index (or block index), and 725120343 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".

Transmit Control Header







Update

# **Chapter 5**

# **DEFINING OUTPUT FORMAT**

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

- I) 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]
- Process the whole data in step 2 with user formats. Data is now divided into fields by user specified rules. Refer to <u>Chapter 6 Applying Formats for Data Editing</u>.
- 4) Add <u>Prefix Code</u> and <u>Suffix Code</u> before transmission: [Prefix Code] [Processed Data] [Suffix Code]

# IN THIS CHAPTER

5.1	Letter Case	171
5.2	Character Substitution	171
5.3	Prefix/Suffix Code	185
5.4	Code ID	186
5.5	Length Code	193
5.6	Multi-Barcode Editor	201
5.7	Removal of Special Character	204
5.8	AIM Code ID	205



Update

Chapter 5 Defining Output Format

## **5.1 LETTER CASE**

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



# **5.2 CHARACTER SUBSTITUTION**

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

- > The first character will be replaced by the second character(s).
- Up to three sets of character substitution can be configured.
- If "BT HID" or "USB HID" is configured as interface, <u>Key Type</u> and <u>Key Status</u> will then become applicable. You may decide whether to apply Key Status when "Normal Key" is selected as Key Type.

Кеу Туре		Key Status
Scan Code	Only 1 scan code value is allowed. Refer to <u>Section 5.2.1 Single Character</u> <u>Substitution</u> .	N/ A
Normal Key	Up to 3 character strings are allowed.	<ul> <li>Add Shift</li> <li>Add Left Ctrl</li> <li>Add Left Alt</li> <li>Add Right Ctrl</li> <li>Add Right Alt</li> <li>Refer to <u>Appendix III Keyboard Wedge</u> Table</li> </ul>

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

# 5.2.1 SINGLE CHARACTER SUBSTITUTION

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



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.

 Read the <u>"Hexadecimal Value" barcode on Appendix IV</u> for the desired character substitution. The first character specified is the target one to be replaced; then the character(s) specified after the first one will be the replacement character(s). For example:

#### Key Type = Normal

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

#### Key Type = Scan Code

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

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

#### Key Type = Normal + Key Status = Shift

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

- 1. Read "3" and "0".
- 2. Read the "Add Shift" barcode.
- 3. Read "3" and "1".
- Read the <u>"Validate" barcode on Appendix IV</u> to complete this setting. (The defined set or sets will be applied to all symbologies by default.)
- 172



Enter Setup

#### **5.2.2 MULTIPLE CHARACTER SUBSTITUTION**

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

Configure Set 1			
Set 1 Target String		Set 1 Replacement String	11025
Configure Set 2			
Set 2 Target String	110.241;	Set 2 Replacement String	
Configure Set 3			
Set 3 Target String		Set 3 Replacement String	

Please follow steps below:

I) Respectively read the "Target String" and "Replacement String" barcodes above to enable string substitution by set.

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

Read the <u>"Hexadecimal Value" barcode on Appendix IV</u> for the desired characters.

- 2) Read the <u>"Validate" barcode on Appendix IV</u> to complete this setting. (The defined set or sets will be applied to all symbologies by default.)
- 3) After specifying the target characters, have the scanner read the "Replacement String" barcode of "Set 1" to specify the replacement characters. Read the <u>"Hexadecimal Value" barcode on Appendix IV</u> for the desired characters. For example,
- Read the <u>"Validate" barcode on Appendix IV</u> to complete this setting. (The defined set or sets will be applied to all symbologies by default.)

For example,

#### Key Type = Normal

Replace the character "0-0" with "\*\*\*":

- 1. Read the Target String barcode.
- 2. Read "3", "0", "2", "D", "3", and "0" barcodes to specify the target string "0-0" (zero, dash, zero).
- 3. Read the Validate barcode.



- 4. Read the Replacement String barcode.
- Read "2", "A", "2", "A", "2", and "A" barcodes to specify the replacement string "\*\*\*" 5. (stars).
- 6. Read the Validate barcode.

#### Key Type = Scan Code

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

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

#### Key Type = Normal + Key Status = Shift

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

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





# 5.2.3 SYMBOLOGIES FOR CHARACTER SUBSTITUTION (ALL 3 SETS)

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

Character Substitution for Codabar		
	*Apply	
	Do Not Apply	
Character Substitution for Code 39		
	*Apply	
	Do Not Apply	
Character Substitution for Trioptic Code 39		
	*Apply	
	Do Not Apply	
Character Substitution for Code 93		
	*Apply	
	Do Not Apply	11025V
	Update	175

*Apply       IIII IIII         be Not Apply       IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	Character Substitution for Code 139		
Do Not Apply       IIII IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII		*Apply	
Character Substitution for GS1-128         *Apply       IIII MAIL         Do Not Apply       IIIII MAIL         Character Substitution for ISBT 128         *Apply       IIIII MAIL         Do Not Apply       IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII		Do Not Apply	
*Apply       IIII ALL         Do Not Apply       IIIII ALL         Do Not Apply       IIIII ALL         Character Substitution for ISBT 128       *Apply         Character Substitution for ISBT 128       IIIII ALL         Do Not Apply       IIIIII ALL         Do Not Apply       IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	Character Substitution for GS1-128		
Do Not Apply       IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII		*Apply	
Character Substitution for ISBT 128         *Apply       IIII.211         Do Not Apply       IIII.211         Do Not Apply         Character Substitution for EAN-8 (No Addon)         *Apply         Do Not Apply       IIII.211		Do Not Apply	
*Apply       IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	Character Substitution for ISBT 128		
Do Not Apply       Improve the provided and the pro		*Apply	
Character Substitution for EAN-8 (No Addon)         *Apply       IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII		Do Not Apply	
*Apply Do Not Apply Character Substitution for EAN-8 Addon 2 *Apply Do Not Apply Do Not Apply Do Not Apply	Character Substitution for EAN-8 (No Addon)		
Do Not Apply		*Apply	
Character Substitution for EAN-8 Addon 2 *Apply Do Not Apply		Do Not Apply	
*Apply IIII/21 Do Not Apply	Character Substitution for EAN-8 Addon 2		
Do Not Apply		*Apply	
ונועחור		Do Not Apply	
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	Chapter 5 Defining Output Format		
Character Substitution for FAN-8 Addon 5			
	*Apply		
	Do Not Apply		
	DO NOU APPLY	110241	
Character Substitution for EAN-13 (No Addon)			
	*Apply		
	Do Not Apply		
		1109-1100 1100 1100 1100 1100 1100 1100 1109-24	
Character Substitution for EAN-13 Addon 2			
	*Apply		
	Do Not Apply		
		אינחור	
Character Substitution for EAN-13 Addon 5			
	*Apply		
	Do Not Apply		
Character Substitution for Italian Pharmacode			
	*Apply		
	Do Not Apply		
		ייאחור	

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Chapter 5 Defining Output Format Character Substitution for GS1 DataBar \*Apply Do Not Apply 1020 Character Substitution for UPC-A (No Addon) \*Apply 10231 Do Not Apply 102-11 Character Substitution for UPC-A Addon 2 \*Apply าเการก Do Not Apply 107201 Character Substitution for UPC-A Addon 5 \*Apply 110301 Do Not Apply 10202 Character Substitution for UPC-E (No Addon) \*Apply הגיחור Do Not Apply וג אי חור

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Chapter 5 Defining Output Format Character Substitution for Composite CC-C \*Apply Do Not Apply าเตละ Character Substitution for Composite TLC-39 \*Apply าเตอร Do Not Apply าเผลง **Character Substitution for US Postnet** \*Apply าเกลอบ Do Not Apply าเตลม **Character Substitution for US Planet** \*Apply 1164523 Do Not Apply ними **Character Substitution for UK Postal** \*Apply 1168221 Do Not Apply 1164522 181



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Do Not Apply

104216



Enter Setup

## **5.3 PREFIX/SUFFIX CODE**

By default, there is no prefix code, and [ENTER] or [CR] (Carriage Return) is configured to be suffix code. Up to 8 characters can be configured, for example, "Barcode\_", and you will have the string appear in front of the barcode read, like this - "Barcode\_1234567890".

If "BT HID" or "USB HID" is configured as interface, <u>Key Type</u> and <u>Key Status</u> will then become applicable. You may decide whether to apply Key Status when "Normal Key" is selected as Key Type.

Кеу Туре		Key Status		
Scan Code	Up to 4 scan code values are allowed.	N/ A		
Normal Key	Up to 8 character strings are allowed.	Add Shift		
		Add Left Ctrl		
		Add Left Alt		
		Add Right Ctrl		
		Add Right Alt		
		Refer to Appendix III 錯誤!找不到參照來源。.		

Configure Prefix



Configure Suffix

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



Update

## 5.4 CODE ID

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

If "BT HID" or "USB HID" is configured as interface, <u>Key Type</u> and <u>Key Status</u> will then become applicable. You may decide whether to apply Key Status when "Normal Key" is selected as Key Type.

Кеу Туре		Key Status
Scan Code	Only 1 scan code value is allowed.	N/ A
Normal Key	Up to 2 character strings are allowed.	<ul> <li>Add Shift</li> <li>Add Left Ctrl</li> <li>Add Left Alt</li> <li>Add Right Ctrl</li> <li>Add Right Alt</li> <li>Refer to Appendix III Keyboard Wedge</li> </ul>
		Table

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



# Chapter 5 Defining Output Format

Code ID options	Set 1	Set 2	Set 3	Set 4	Set 5
Code 39	A	С	Y	М	A
Trioptic Code 39	A	С	Y	М	Х
Italian Pharmacode	A	С	Y	М	A
Industrial 25	С	н	н	н	S
Interleaved 25	D	I	Z	1	S
Matrix 25	E	G	G	G	S
Chinese 25	Q	М	Р	S	Х
Codabar	F	N	х	N	F
Code 93	I	L	L	L	G
Code 128	Н	К	К	К	С
ISBT 128	Н	К	К	к	С
UPC-E	S	E	С	E	E
EAN-8	Р	В	В	FF	E
EAN-13	М	А	А	F	E
UPC-A	J	А	А	А	E
MSI	V	V	D	Р	М
UCC Coupon Code	G	F	I	С	С
Code 11	к	J	J	D	н
Composite CC-A/B	L	Х	М	J	La
Composite CC-C	Ν	Y	Ν	0	Lc
Composite TLC-39	0	Z	0	R	L2
US Postnet	h	a	s	i	Х
US Planet	i	b	t	j	х
UK Postal	j	с	u	k	х
Japan Postal	k	d	v	I	Х
Australian Postal	I	е	w	m	х
Dutch Postal	m	f	x	n	х
USPS 4 CB / One Code / Intelligent Mail	n	g	у	0	х
UPU FICS Postal	0	h	z	р	Х
PDF417	а	0	W	Т	L
MicroPDF417	b	Р	V	U	L
Data Matrix	с	Q	U	V	d
Maxicode	d	R	Т	W	U



	1	1		1	1
QR Code	е	S	S	Х	Q
MicroQR	f	Т	R	Y	Q
Aztec	g	U	Q	Z	z
ΙΑΤΑ	z	z	r	h	S
Macro PDF417	р	i	а	q	L
Macro MicroPDF417	q	j	b	r	L



#### 5.4.2 CHANGE CODE ID

- I) Read the barcode below to change code ID of a specific symbology.
- 2) Read the <u>"Hexadecimal Value" barcode on Appendix IV</u> for the desired character string. For example, read "4" and "4" for applying the character [D] for Code ID.
- 3) Read the <u>"Validate" barcode on Appendix IV</u> to complete this setting.



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#### Chapter 5 Defining Output Format





Mail

Update



Chapter 5 Defining Output Format

# **5.5 LENGTH CODE**

Length Code for Codabar

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.

Apply 110.111 \*Do Not Apply 107/12 Length Code for Code 39 Apply \*Do Not Apply 10.000 Length Code for Trioptic Code 39 Apply 110.PJ P. \*Do Not Apply 105536 Length Code for Code 93 Apply 10/15 \*Do Not Apply 100117 193 Update

194		
		10775
	Apply	
Length Code for EAN-13		
	*Do Not Apply	
	Apply	
Length Code for EAN-8		
	*Do Not Apply	
	Apply	
Length Code for ISBT 128		
	*Do Not Apply	
	Apply	
Length Code for GS1-128 & GS1 DataBar		
	*Do Not Apply	
	Apply	
Length Code for Code 128		

	Chapt	Chapter 5 Defining Output Format	
	*Do Not Apply		
ength Code for Italian Pharmacode			
	Apply		
	*Do Not Apply		
ength Code for Industrial 25			
	Apply		
	*Do Not Apply		
ength Code for Interleaved 25			
	Apply		
	*Do Not Apply		
ength Code for Matrix 25			
	Apply		
	*Do Not Apply		
ength Code for Chinese 25			
	Apply		
		195	
	Update		

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	*Do Not Apply	
Length Code for MSI		
	Apply	
	*Do Not Apply	
Length Code for UPC-A		
	Apply	
	*Do Not Apply	
Length Code for UPC-E		
	Apply	
	*Do Not Apply	
Length Code for UCC Coupon Extended Code		
	Apply	
	*Do Not Apply	
Length Code for Code 11		
	Apply	
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	Chapt	er 5 Defining Output Format
	*Do Not Apply	
ength Code for Composite CC-A/B		
	Apply	
	*Do Not Apply	
ength Code for Composite CC-C		
	Apply	
	*Do Not Apply	
ength Code for Composite TLC-39		
	Apply	
	*Do Not Apply	
ength Code for US Postnet		
	Apply	
	*Do Not Apply	
ength Code for US Planet		
	Apply	
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	*Do Not Apply	
Length Code for UK Postal		
	Apply	
	*Do Not Apply	
Length Code for Japan Postal		
	Apply	
	*Do Not Apply	
Length Code for Australian Postal		
	Apply	
	*Do Not Apply	
Length Code for Dutch Postal		
	Apply	
	*Do Not Apply	
Length Code for USPS 4CB/One Code/Intelligen	t Mail	
	Apply	
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	Ente	er Setup

	Chapt	er 5 Defining Output Format
	*Do Not Apply	
ength Code for UPU FICS Postal		
	Apply	
	*Do Not Apply	
_ength Code for PDF417		
	Apply	
	*Do Not Apply	
ength Code for MicroPDF417		
	Apply	
	*Do Not Apply	
ength Code for Data Matrix		
	Apply	
	*Do Not Apply	
ength Code for Maxicode		
	Apply	
		199
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## **5.6 MULTI-BARCODE EDITOR**

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

Note: The Multi-Barcode Editor has nothing to do with Section 1.6.6 Multi-Barcode Mode.

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

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



## 5.6.1 EDIT A CONCATENATION OF BARCODES

Edit Output Sequence



- I) Read the barcode above to start editing a concatenation of barcodes.
- Code Type setting read the <u>"Hexadecimal Value" barcode on Appendix IV</u> for Code Type of the (first) barcode. For example, read "4" and "1" for Code 39.

Code Type	Symbology	Code Type	Symbology
40 (@)	ISBT 128		
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 (I)	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



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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
		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 "<u>Decimal Value</u>" barcode on Appendix IV for the 4-digit length of the (first) barcode. For example, read "0065" for barcode length of 65 characters or read "0000" for any length.

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

- 4) Matching Character setting read the <u>"Hexadecimal Value" barcode on Appendix IV</u> for the 1<sup>st</sup> character that must be found matching in the (first) barcode. For example, read "4" and "1" for matching character "A" as the first character in the barcode or read "00" for any character.
- 5) Read twice the "F" barcode on Appendix IV ("FF") to complete the setting of each barcode.
- 6) Read the <u>"Validate" barcode on Appendix IV</u> to end the editing of the barcode set.

#### 5.6.2 ACTIVATE THE CONCATENATION OF BARCODES

By default, the output sequence editing of the concatenation of barcodes is not applied. When "Enforce Output Sequence" is enabled, all barcodes read by the scanner must meet with the criteria for the concatenation. If data is found excluded from all output sequence sets (= not meeting with the criteria), the scanner will not accept the reading, and therefore, data will not be transmitted.

When "Apply Output Sequence" is enabled, only barcodes found meeting with the criteria are counted for the concatenation. Those found not meeting with the criteria are processed normally and individually.

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



date



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

## 5.7 REMOVAL OF SPECIAL CHARACTER

A single character can be specified only. Every matching character from the starting position of barcode data will be removed until a different character is met. For example, if you specify the character "0" (hex value is "30") to be removed from barcode data, 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



- I) Read the barcode above to remove the specified character.
- 2) Read the <u>"Hexadecimal Value" barcode on Appendix IV</u> for the desired character string. For example, read "3" and "0" for the scanner to remove the character "0".
- 3) Read the <u>"Validate" barcode on Appendix IV</u> to complete this setting.



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## 5.8 AIM CODE ID

You can add an AIM (Automatic Identification and Mobility) code ID in front of the barcode that shares the common purpose of identifying, tracking, recording, storing, and communicating essential business, personal, or product data. Enabling this function can have the scanner be capable of fast and accurate data collection and search.

\*Disable



Enable



Update

# **Chapter 6**

## 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 comprise the data actually sent to the host computer.

With the editing format applied, the maximum output data length of a barcode is 7 KB after configuration. If the data length exceeds 7 KB, editing format will not take effect.

[PrefixCode]	[Code ID]	[Length Code]	[Data]	[SuffixCode]	Additional Field(s)
None by default	None by default	None by default	Barcode itself	0x0d by default	User-defined field(s)

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6.3	Configuring Format — Define Data Criteria	211
6.4	Configuring Format — Define Data Field	222
6.5	Configuring Format — Define Transmission Sequence	229
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Update

## 6.1 ACTIVATING EDITING FORMATS

## 6.1.1 ACTIVATE EDITING FORMATS

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

Editing Format 1		
	Enable	
	*Disable	
Editing Format 2		
	Enable	
	*Disable	
Editing Format 3		
	Enable	
	*Disable	
Editing Format 4		
	Enable	
	*Disable	
	Updat.e	207

Editing Format 5
Enable
\*Disable
6.1.2 EXCLUSIVE DATA EDITING

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



\*No

Yes



End Programming Format



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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



## 6.2.2 RESTORE DEFAULT FORMAT

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

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

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Additional Fields	None
Field Transmission Sequence	F1

Restore Default Format



## 6.3 CONFIGURING FORMAT - DEFINE DATA CRITERIA

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

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

#### 6.3.1 APPLICABLE CODE TYPE

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

Note: You must have at least one symbology selected.

	*Apply to All	
	Clear All	
Editing Format for Codabar		
	*Apply	
	Do Not Apply	
Editing Format for Code 39		
	*Apply	
	Update	211

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	Do Not Apply	
Editing Format for Trioptic Code 39		
	*Apply	
	Do Not Apply	
Editing Format for Code 93		
	*Apply	
	Do Not Apply	
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	
212	End December 1	Eormat

	Chapter 6 Apply	ing Formats For Data Editing
	Do Not Apply	
Editing Format for EAN-8		
	*Apply	
	Do Not Apply	
Editing Format for EAN-8 Addon 2		
	*Apply	
	Do Not Apply	
Editing Format for EAN-8 Addon 5		
	*Apply	
	Do Not Apply	
Editing Format for EAN-13		
	*Apply	
	Do Not Apply	
Editing Format for EAN-13 Addon 2		
	*Apply	
		213
	Update	

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	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		
	*Apply	
	Do Not Apply	
Editing Format for Matrix 25		
	*Apply	
214		
	End Programming	j Format

Not Apply	
*Apply Do Not Apply	
*Apply Do Not Apply	
Do Not Apply	
*Apply	
Do Not Apply	
*Apply	
Do Not Apply	
*Apply	
Do Not Apply	
*Apply	
	Do Not Apply *Apply Do Not Apply *Apply Do Not Apply Do Not Apply

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	Do Not Apply	1105/2
Editing Format for UPC-E		
	*Apply	
	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		
	*Apply	
216		
	End Programming	f Format

	Chapter 6 Apply	ying Formats For Data Editing
	Do Not Apply	110124;
Editing Format for Composite CC-A/B		
	*Apply	
	Do Not Apply	
Editing Format for Composite CC-C		
	*Apply	
	Do Not Apply	
Editing Format for Composite TLC-39		
	*Apply	
	Do Not Apply	
Editing Format for US Postnet		
	*Apply	
	Do Not Apply	
Editing Format for US Planet		
	*Apply	
		217
	Update	

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	Do Not Apply	
Editing Format for UK Postal		
	*Apply	
	Do Not Apply	
Editing Format for Japan Postal		
	*Apply	
	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/Intelli	gent Mail	11117-11
	*Apply	
218	End Programming	y Format

	Chapter 6 Apply	ving Formats For Data Editing
	Do Not Apply	
Editing Format for UPU FICS Postal		
	*Apply	
	Do Not Apply	
Editing Format for PDF417		
	*Apply	
	Do Not Apply	
Editing Format for MicroPDF417		
	*Apply	
	Do Not Apply	
Editing Format for Data Matrix		
	*Apply	
	Do Not Apply	
Editing Format for Maxicode		
	*Apply	
		219
	Update	



### 6.3.2 DATA LENGTH

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

- Specify a value.
- > When zero is given to both, the scanner will not perform the length qualification.
- Read the barcode below to specify Max. Length or Min. Length separately, and follow steps 2~3.

Max. Length



Min. Length

- 2) Read the <u>"Decimal Value" barcode on Appendix IV</u> for the desired length.
- 3) Read the <u>"Validate" barcode on Appendix IV</u> to complete this setting.

#### 6.3.3 MATCHING STRING & LOCATION

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

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

Matching String ...



- Read the <u>"Hexadecimal Value" barcode on Appendix IV</u> for the desired character string.
- 3) Read the <u>"Validate" barcode on Appendix IV</u> to complete this setting.
- 4) Read the barcode to specify the location of the matching string.





- 5) Read the <u>"Decimal Value" barcode on Appendix IV</u> for the desired location.
- 6) Read the <u>"Validate" barcode on Appendix IV</u> to complete this setting.



Update

## 6.4 CONFIGURING FORMAT - DEFINE DATA FIELD

## 6.4.1 START POSITION

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

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

\*From Head



From Tail

### 6.4.2 FIELD ADJUSTMENT

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

\*No adjustment

Set length to adjust fields...

(\*0)



I) Read the barcode above to adjust field by length.

- 2) Read the <u>"Decimal Value" barcode on Appendix IV</u> for the desired field length.
- 3) Read the <u>"Validate" barcode on Appendix IV</u> to complete this setting.

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#### 6.4.3 TOTAL NUMBER OF FIELDS

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





Update

### **6.4.4 FIELD SETTINGS**

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

#### By Terminating String

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

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

#### By Length

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

#### Field 1 Setting

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

Select Field Separator to Divide Field 1...



2. Read the "Hexadecimal Value" barcode on Appendix IV for the desired character string.

- 3. Read the <u>"Validate" barcode on Appendix IV</u> to complete this setting.
- 4. Read the "Discard Separator" barcode if the field separator is not desired in the field.



Discard Separator

\*Include 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 <u>"Decimal Value" barcode on Appendix IV</u> for the desired field length.
- 3. Read the "Validate" barcode on Appendix IV to complete this setting.

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## Field 2 Setting 1. Read the barcode below to divide field 2 by a specified terminating string. Select Field Separator to Divide Field 2... 105-7 2. Read the <u>"Hexadecimal Value" barcode on Appendix IV</u> for the desired character string. 3. Read the "Validate" barcode on Appendix IV to complete this setting. Read the "Discard Separator" barcode if the field separator is not desired in the field. 4 \*Include Separator Discard Separator 100533 If not dividing the field by a specific separator, you may divide it by a specified length. Read the barcode below to divide field 2 by length. 1. Divide Field 2 by Length Read the <u>"Decimal Value" barcode on Appendix IV</u> for the desired field length. 2. 3. Read the <u>"Validate" barcode on Appendix IV</u> 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... 105-5 2. Read the "Hexadecimal Value" barcode on Appendix IV for the desired character string. 3. Read the <u>"Validate" barcode on Appendix IV</u> to complete this setting. 4. Read the "Discard Separator" barcode if the field separator is not desired in the field. \*Include Separator 225



Update



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

> Divide Field 4 by Length



Read the <u>"Decimal Value" barcode on Appendix IV</u> for the desired field length. 2.

Read the <u>"Validate" barcode on Appendix IV</u> to complete this setting. 3.

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#### Field 5 Setting

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

Select Field Separator to Divide Field 5...



- 2. Read the "Hexadecimal Value" barcode on Appendix IV for the desired character string.
- 3. Read the <u>"Validate" barcode on Appendix IV</u> 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 <u>"Decimal Value" barcode on Appendix IV</u> for the desired field length.
- 3. Read the <u>"Validate" barcode on Appendix IV</u> 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" or "USB HID" is configured as 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 as Key Type.

Кеу Туре		Key Status
Scan Code	Up to 2 scan code values are allowed.	N/A



Update

Normal Key	Up to 4 character strings are allowed.	Add Shift
		Add Left Ctrl
		Add Left Alt
		Add Right Ctrl
		Add Right Alt
		Refer to 錯誤!找不到參照來源。

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



- 2. Read the <u>"Hexadecimal Value" barcode on Appendix IV</u> for the desired additional field.
- 3. Read the "Validate" barcode on Appendix IV to complete this setting.

6.4	6.4.5 PAUSE FIELD SETTING		
Pau	Pause Field Time		
You	a can limit the pause time interval (1~16). By	default, it is set to 1 se	cond.
		Pause Field Time 1~16 sec. (*1)	
1.	Read the barcode above to specify the time i default.)	nterval for the Pause F	ield. (It is set to 1 by
2.	<ol> <li>Read the "<u>Decimal Value</u>" barcode on Appendix IV. For example, read "1" and "0" for setting the Pause Field Time to 10 seconds.</li> </ol>		
3.	Read the "Validate" barcode on Appendix IV	to complete this setting	].
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### 6.5 CONFIGURING FORMAT - DEFINE TRANSMISSION SEQUENCE

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

Note: Up to twelve fields can be assigned.

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



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Update



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

End Programming ...

Pause Field

Field



End Programming Format

## 6.6 PROGRAMMING EXAMPLES

## 6.6.1 EXAMPLE I

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

The editing format should be configured as follows:

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

## 6.6.2 EXAMPLE II

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

Data in a barcode is encoded like this:

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

Data will be transmitted like this:

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



The editing format should be configured as follows:

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



## **SPECIFICATIONS**



Optical Characteristics	Ring Scanner		
Scan Engine	2D Imager		
Light Source	SE4107 reader	Aiming LED Green LED	
		Illumination: 1 x Warm-White LED	
	SE4770 reader	Aiming Red Laser (655nm)	
		Illumination: 1 x Warm-White LED	
	SE5500 reader	Aiming Green Laser (520 nm)	
		Illumination: 2x Warm white LEDs	
	SE4750MR reader	Aiming Red Laser (655nm)	
		Illumination: 2x Warm white LEDs	
RF Characteristics			
WPAN Module	Bluetooth Class 2;		
	Bluetooth 5.0 compliance		
Coverage (line-of-sight)	Up to 100 meters (Under the circumstance without any obstacles)		
Interface Supported	Serial Port Profile (BT SPP)		
	Human Interface Device Profile (BT HID)		
	BLE SPP Lite		
	HID Bluetooth Low Energy (HOGP)		



Update

Physical Characteristics			
Memory		10 KB SDRAM for transmit buffer	
		8 MB flash for memory mode	
Switch		Tactile switch	
Indication		Triple-color LED (Red/Green/Blue) and beeper	
Weight		Approx. 61g (Main core includes SE5500 reader and the battery) and 15g (ring trigger)	
Electrical Characteristics	6		
Battery		Rechargeable Li-ion battery - 3.85 V, 600 mAh	
Power Adaptor			
Input		AC 100~240 V (50/60 Hz)	
Output		DC 5V, 2A	
Operating Temperatur	e	0 °C to 40 °C	
Environmental Characte	ristics		
Temperature	Operating	0 °C to 40 °C with battery	
	Storage	-30 °C to 60 °C (includes the battery)	
		-30 °C to 70 °C (excludes the battery)	
Humidity	Operating	10% to 90%(Non-condensing)	
(Non-condensing)	Storage	5% to 95% (Non-condensing)	
Resistance			
Impact Resistance		1.8 m, 5 drops per 6 sides	
Splash / Dust Resistan	се	IP 65	
Electrostatic Discharge	•	± 20 kV air discharge, ± 10 kV contact discharge	
Programming Support			
Configuration		Setup barcodes or host serial commands.	
Software		Windows <sup>®</sup> -based ScanMaster	
Firmware upgradeable		Download firmware updates via the download utility.	
Accessories (√ means "supported")			
Rechargeable Li-ion Ba	attery	1	
Battery Charger		1	
Bluetooth Dongle		1	
USB Cable		1	



# Appendix I

## FIRMWARE UPGRADE

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

Note: In case it fails downloading due to low battery, make sure the targe scanner is loaded with good battery and the battery charge is enough. When the scanner tries to enter the download mode and detects low battery charge remaining, you will hear one short beep then one long beep (high-low tone) accompanied by the LED indicator flashing five times. Then the upgrade task is aborted.

HOW TO UPGRADE SCANNER FIRMWARE

3)

Two ways are provided for updating the firmware of WR30 D ring scanner: USING USB-TYPE C CABLE

- Connect USB Type-C cable between the USB port of the ring scanner and your computer. (Only Windows 10 or above are supported.)
- 2) In case the OS run in the host computer is Windows, please have your ring scanner read the following barcodes in sequence to configure its interface as USB VCOM\_CDC.

Enter Setup



Update

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

Download

Enter Setup



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



Update

User Program	
STD_RingScanner_V*.shx	
Conner settings     28       Conner settings     7       COM poet:     1       Disaut rate :     115200 bps	<ul> <li>For the communication settings, select "RS-232/IrDA" and the correct COM port for RS-232 or USB Virtual COM interface.</li> <li>For RS-232, select 115200 bps for baud rate</li> <li>For the file option, click [Browse] to select the target file for firmware update after selecting .SHX file as the file type.</li> </ul>
File option File type : SHOL THE + File mannet : Browne (C.1)Decomments and Settlings/powrie.CPH 0K Exit	Click [OK].

Note 1: After the firmware is transmitted to the ring scanner, LED will flash in red and green colors by turns to indicate that the firmware is upgrading. Wait for 40 seconds around and do not power off the device by removing the battery or pressing the **Shutdown Key** during the process of the firmware upgrade. The scanner will automatically restart when the upgrade is completed.

Note 2: For the download of the latest WR30 firmware, please visit <u>CipherLab official</u> <u>website</u>.

#### CONNECT TO CIPHERLAB MOBILE COMPUTER VIA BLUETOOTH

To do the firmware upgrade for the ring scanner through the bluetooth connection, make sure the bluetooth connection between the mobile computer and the scanner has been established beforehand. You may refer to <u>Chapter 3 – Setting up a WPAN Connection</u> for more details with regard to the ways of building this connection. And follow the procedures listed below step by step, the firmware can be updated easily.

- I) Launch CipherLab Intelliw orker App installed on your mobile computer.
- 2) Rename the new firmware file to be upgraded as firmware.shx.
- Create a new directory of Android\data\sw.programme.intelliworker\files\Download on the mobile computer. Then, place the file of firmware.shx you rename in Step 2 under this directory.
- 4) On the start-up screen of Intelliworker App, tap on Firmware Update function from the menu displayed.
- 5) On Firmware Update page, tap on **Select File** button to locate the file of firmware.shx.



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Enter Setup
# Appendix | 錯誤! 找不到參照來源。

melkWorker		21 X	III 6 A 11 - II Downloads	9.1
	Firmware Up	odate	C) Later films (C) This week	
Brussecr			B feets free	
Collector	>			-
Califord saming trease			B. and it is a state	20
And and a second	<u>²-</u>   <b>†</b>			
8 .	Ø	(and an		

6) After selecting this new firmware file, simply tap on **Update** button to proceed with the upgrade.

EINTINA B- STAL		
Province opcone		
Version No. 111		$\sim$
-	215	( )
fernesse alty Salest		$\sim$
	Update in Process.	Completinill
Contraction Contraction		



# Appendix II

# HOST SERIAL COMMANDS

# SERIAL COMMANDS

D	
Purpose	To disable the scanner.
Remarks	"D"
E	
Purpose	To enable the scanner.
Remarks	<i>"</i> Е"
#@ nnnnnn •	<cr></cr>
Purpose	To configure the scanner.
Remarks	nnnnn – the six digits of command parameters.
	For example, "109952" is to list the current Code ID settings.
	List Page 3
	112122 Serial Command
	0x23'' + 0x40'' + 0x31'' + 0x30'' + 0x39'' + 0x39'' + 0x35'' + 0x32'' + 0x0d''

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

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

# #@....<CR>

Purpose	To resu	ne	operatio	on									
Remarks	"0x23"	+	"0x40"	+	"0x2e"	+	"0x2e"	+	"0x2e"	+	"0x2e"	+	"0x0d"

# #@////<CR>

Purpose	To respond with a beep.
	No. 00 <i>4</i> . No. 40 <i>4</i> . No.

Remarks "0x23" + "0x40" + "0x2f" + "0x2f" + "0x2f" + "0x2f" + "0x0d"



### #@TRIGOFF<CR>

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

#### #@TRIGON<CR>

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

# #@RDSN<CR>

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

### #@BEEP, nn<CR>

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

#### #@RLED, nn<CR>

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

# #@GLED, nn<CR>

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



Remarks	nn - the two digits of command parameters For example, '#@GLED,09' is to have the scanner blink for 9 times. "0x23" + "0x40" + "0x47" + "0x4c" + "0x45" + "0x44" + "0x2c" + "0x30" + "0x39" + "0x0d"
#@VIBR,nn <cr></cr>	
Purpose	Have the scanner vibrate as many times as you specified ranging from 00 to $99$
	(00 is to stop the work). The length of vibrating time is based on the Good Read
	Vibrator Duration setting and the constant interval between two shakes is
	500ms.
Remarks	nn – the two digits of command parameters
	For example, '#@VIBR,09' is to have the scanner blink for 9 times.
	" $0x23$ " + " $0x40$ " + " $0x56$ " + " $0x49$ " + " $0x42$ " + " $0x52$ " + " $0x2c$ " + " $0x30$ "
	+ "0x39" + "0x0d"

# #@ChargStat?<CR>

Purpose	Read the charging status of WR30.
Remarks	" $0x23$ " + " $0x40$ " + " $0x43$ " + " $0x68$ " + " $0x61$ " + " $0x72$ " + " $0x67$ " + " $0x53$ " + " $0x74$ " + " $0x61$ " + " $0x74$ " + " $0x3F$ " + " $0x0d$ "
	"1" stands that the scanner is in charging.
	"0" stands that the scanner is not in charging or is fully charged.



#### **EXAMPLE**

You may run HyperTerminal.exe on the host computer to send serial commands to the ring scanner via USB VCOM CDC.

- For the scanner to stop immediately -
  - D
- For the scanner to resume working
  - E
- For the scanner to change the beeper to medium volume and beep -#@101011<CR>
  - #@////<CR>
- For the scanner to change the beeper to minimal volume and beep -

#@101010<CR> #@////<CR>

For the scanner to change the beeper frequency to 8 kHz (for Good Read Beep only) and beep -

#@101001<CR>

#@////<CR>

For the scanner to change the beeper length to longest (for Good Read Beep only) and beep -

#@101008<CR> #@////<CR>

- ▶ For the scanner to save the settings, send the serial command "#@109999" -#@101011<CR> #@109999<CR>
- For the scanner to read the serial number and beep -#@RDSN<CR>

#@////<CR>

- For the scanner to beep for nine times -#@BEEP,09<CR>
- For the scanner's LED indicator to blink in red for nine times #@RLED, 09<CR>
- For the scanner's LED indicator to blink in green for nine times #@GLED, 09<CR>



Appendix II Keyboard Wedge Table

# WR30 USB DONGLE SETUP BARCODES & SERIAL COMMANDS

Normally, you can configure WR30 Dongle by having one of the connected scanners read the related setup barcodes.

- Connect WR30 Dongle to your computer. (WR30 Dongle only supports Windows 10 operating system or above.)
- Refer to <u>Section 3.5.1 Connect to WR30 Dongle</u> for the target scanner to connect to WR30 Dongle.
- Have the ring scanner read the following barcodes in sequence to configure WR30 Dongle.

Enter Setup



(WR30 Dongle-related setup barcodes, see the table below)

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For WR30 Dongle-related setup barcodes, refer to the Serial Command table below. Note that for the "Version" and "GetID" barcodes, you must run HyperTerminal.exe or any text editor on your computer to receive the information replying from WR30 Dongle.

- If the output interface is USB Virtual COM CDC, run HyperTerminal.exe on your computer to receive the information replying from WR30 Dongle.
- If the output interface is USB HID, run Notepad.exe on your computer to receive the information replying from WR30 Dongle.



Update

## WR30 Ring Scanner User's Guide

# WR30 USB DONGLE SERIAL COMMAND AND EQUIVALENT SETUP BARCODES

#### Config<CR>

Purpose



Remarks

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

## DefaultSetting<CR>

Purpose To restore the default settings.

Here is the setup barcode for this serial command:



To configure WR30 Dongle.

#### Version<CR>

Purpose

To get the current firmware version of WR30 Dongle. Here is the setup barcode for this serial command:



## GetID<CR>

Purpose

To get MAC ID of WR30 Dongle.

Here is the setup barcode for this serial command:



## Download<CR>

Purpose

To download CPU firmware to WR30 Dongle (via USB VCOM CDC).

Here is the setup barcode for this serial command:



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Enter Setup

#### **EXAMPLE**

Without using the scanner to read the above setup barcodes for configuring WR30 Dongle, you may run HyperTerminal.exe on the host computer to send the above serial commands to WR30 Dongle.

Connect WR30 Dongle to your computer.(WR30 Dongle only supports Windows 10 operating system or above.)

The LED of WR30 Dongle will indicate when WR30 Dongle can accept the serial commands from the computer after initializing. Refer to the table below.

- If the output interface is USB Virtual COM CDC, run HyperTerminal.exe on your computer. While the LED on WR30 Dongle starts flashing in blue color, type the serial command within three seconds.
- If the output interface is USB HID, press the "Num Lock" or "Caps Lock" key on your keyboard 5 times within 3 seconds while the LED on WR30 Dongle is flashing blue until the third time. This will change the interface from USB HID to USB Virtual COM CDC. Then, run HyperTerminal.exe on your computer to ensure that the corresponding COM Port No. is connected. Type the serial command within three seconds. After configuring via the serial commands, the interface will be reset to USB HID after re-plugging in WR30 Dongle.

WR30 Dongle LED		Meaning
	Blue, flashing	The LED slowly flashes in blue color (On/Off ratio 0.5 s: 0.5 s) to indicate that WR30 Dongle is waiting for the bluetooth connection.
	Blue, flashing	The LED rapidly flashes in blue color (On/Off ratio 0.1 s: 0.1 s) to indicate that the connection between WR30 Dongle and the ring scanner via bluetooth is established.
	Blue, solid	The firmware upgrade of WR30 Dongle is in progress.



Update

# Appendix III

# **KEYBOARD WEDGE TABLE**

# APPLY SPECIAL KEYBOARD

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

"Apply" Special Keyboard									
	0	1	2	3	4	5	6	7	8
0		F2	SP	0	@	Р	`	р	0
1	INS	F3	!	1	A	Q	a	q	0
2	DLT	F4	"	2	В	R	b	r	0
3	Home	F5	#	3	С	S	с	s	3
4	End	F6	\$	4	D	Т	d	t	4
5	Up	F7	%	5	E	U	е	u	\$
6	Down	F8	&	6	F	V	f	v	6
7	Left	F9	'	7	G	W	g	w	Ø
8	BS	F10	(	8	Н	х	h	x	8
9	НТ	F11	)	9	I	Y	i	у	9
Α	LF	F12	*	:	J	Z	j	z	
В	Right	ESC	+	;	к	[	k	{	
С	PgUp	Exec	,	<	L	١	1	1	
D	CR	CR*	-	=	М	]	m	}	
E	PgDn			>	N	^	n	~	
F	F1		1	?	0		o	Dly	ENTER*

Note: (1) @~ 9: Digits of numeric keypad.

(2) CR\*/ENTER\*: ENTER key on the numeric keypad.

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# Appendix III Keyboard Wedge Table

# BYPASS SPECIAL KEYBOARD

"Bypass" Special Keyboard									
	0	1	2	3	4	5	6	7	8
0			SP	0	@	Р	`	р	
1			!	1	А	Q	a	q	
2			•	2	В	R	b	r	
3			#	3	С	S	с	s	
4			\$	4	D	Т	d	t	
5			%	5	E	U	е	u	
6			&	6	F	v	f	v	
7			•	7	G	w	g	w	
8	BS		(	8	н	х	h	x	
9	НТ		)	9	1	Y	i	у	
Α	LF		*	:	J	z	j	z	
В		ESC	+	;	к	[	k	{	
С			,	<	L	١	1	1	
D	CR		-	=	М	]	m	}	
E				>	N	^	n	~	
F			1	?	0	_	o	Dly	



BYPASS SPECIAL KEYBOARD WITH CONTROL CHARACTER OUTPUT									
"Bypass" Special Keyboard with Control Character Output									
	0	1	2	3	4	5	6	7	8
0		DLE	SP	0	@	Р	`	р	
1	SOH	DC1	!	1	А	Q	a	q	
2	STX	DC2	"	2	В	R	b	r	
3	ETX	DC3	#	3	С	S	с	s	
4	EOT	DC4	\$	4	D	Т	d	t	
5	ENQ	NAK	%	5	E	U	е	u	
6	ACK	SYN	&	6	F	v	f	v	
7	BEL	ETB	•	7	G	w	g	w	
8	BS	CAN	(	8	н	х	h	x	
9	НТ	EM	)	9	1	Y	i	у	
Α	LF	SUB	*	:	J	Z	j	z	
В	VT	ESC	+	;	к	[	k	{	
С	FF	FS	,	<	L	١	1	1	
D	CR	GS	-	=	М	]	m	}	
E	SO	RS		>	N	^	n	~	
F	SI	US	/	?	0	_	o	Dly	

Note: When Special Keyboard is set to "Bypass with Control Character Output" (refer to Section 2.1.8 Special Keyboard Feature), the control characters ranging from 0x01 to 0x1F (SOH ~ US) can then be sent to host computer (Windows only).



Appendix III Keyboard Wedge Table



# EXAMPLE

#### Key Type = Normal

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

- 1. Read the "Configure Prefix" barcode.
- 2. Read the <u>"Hexadecimal Value" barcode on Appendix IV</u> for "2" and "1".
- 3. Read the "Validate" barcode on Appendix IV 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:

- Read the "Configure Prefix" barcode. 1.
- 2. Read the "Scan Code" barcode.
- 3. Read the <u>"Hexadecimal Value" barcode on Appendix IV</u> for "1" and "C".
- 4. Read the "Validate" barcode on Appendix IV to complete this setting.

#### Key Type = Normal + Key Status = Shift

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

- 1. Read the "Configure Prefix" barcode.
- 2. Read the "Add Shift" barcode.
- 3. Read the "Hexadecimal Value" barcode on Appendix IV for "3" and "1".
- Read the "Validate" barcode on Appendix IV to complete this setting. 4

#### Key Type = Normal + Key Status = Ctrl

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

- 1. Read the "Configure Prefix" barcode.
- 2. Read the "Add Left Ctrl" barcode.
- 3. Read the <u>"Hexadecimal Value" barcode on Appendix IV</u> for "4", "1" (= "A").
- Read the "Add Left Ctrl" barcode. 4
- Read the <u>"Hexadecimal Value" barcode on Appendix IV</u> for "2", "4" (= "\$"). 5.
- 6 Read the "Validate" barcode on Appendix IV to complete this setting.



# Appendix IV

# NUMERAL SYSTEMS

DECIMAL SYSTEM					
Decimal					
		, , , , , , , , , , , , , , , , , , ,			
		9 			
Validate the Values					
II I I I I I I I I I I I I I I I I I I	Validate				
Update		Abort	251		

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Enter Setup

# Appendix IV Numeral Systems

ASCII TABLE									
	0	1	2	3	4	5	6	7	
0		DLE	SP	0	@	Р	`	р	
1	SOH	DC1	!	1	А	Q	a	q	
2	STX	DC2	"	2	В	R	b	r	
3	ETX	DC3	#	3	С	S	с	s	
4	EOT	DC4	\$	4	D	Т	d	t	
5	ENQ	NAK	%	5	E	U	е	u	
6	ACK	SYN	&	6	F	V	f	v	
7	BEL	ETB	'	7	G	w	g	w	
8	BS	CAN	(	8	н	х	h	x	
9	HT	EM	)	9	I	Y	i	У	
А	LF	SUB	*	:	J	Z	j	z	
В	VT	ESC	+	;	к	[	k	{	
С	FF	FS	,	<	L	١	I	1	
D	CR	GS	-	=	М	]	m	}	
E	SO	RS		>	N	^	n	~	
F	SI	US	/	?	0	_	0	DEL	

Update



# Appendix V

# **READING DRIVER LICENSES**

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

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



Appendix V Reading Driver Licenses

# **OUTPUT SEQUENCE SETUP**

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









License Endorsements

License Restrictions

Home Address Postal Code

Postal Code

Height (Feet and/or Inches)

Height (Centimeters)





Enter Setup

### Appendix V Reading Driver Licenses

Weight

Weight

Gender



257







AKA Birth Date

Nonresident

Customer ID

Number

AKA Social Security Name

AKA Full Name

AKA Last Name

AKA First Name

AKA Middle Name/Initial

AKA Name Suffix

AKA Name Prefix

Weight Range

258

Enter Setup

### Appendix V Reading Driver Licenses



Place of Birth

Document

Country

Federal

Audit Information

Inventory Control

Race/Ethnicity

Std Vehicle Class

Std Restrictions

Std Endorsements

Class Description

Endorsement Description







Restrictions Description

Permit Class

Permit Expiration Date

Permit ID Number

Permit Issue Date

Permit Restrictions

Permit endorsements

Issuer ID Number

Family Name Truncation

First Name Truncation

Middle Name Truncation





Enter Setup

Appendix V Reading Driver Licenses

# SEPARATORS AND FIELDS

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

Note: Up to 5 separators can be assigned.







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### **EDIT SEPARATORS**

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



- Read the barcode above to apply separator to driver license information separately, and follow steps 2~3.
- Read the "<u>Hexadecimal Value</u>" barcode on <u>Appendix IV</u> for the desired character string. For example, read "3" and "A" for the separator to split the data with character [:].
- 3) Read the "Validate" barcode on Appendix IV to complete this setting.





Appendix V Reading Driver Licenses

### **EDIT FIELDS**

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

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

Кеу Туре		Key Status				
Scan Code	Up to 2 scan code values are allowed.	N/ A				
Normal Key	Up to 4 character strings are allowed.	Add Shift				
		Add Left Ctrl				
		Add Left Alt				
		Add Right Ctrl				
		Add Right Alt				
		Refer to <u>Appendix III Keyboard Wedge</u> <u>Table</u> .				

Field 1

Field 2

Field 3

Field 4

Field 5



- I) Read the barcode above to specify an additional field, one at a time.
- 2) Read the "Hexadecimal Value" barcode on Appendix IV for the desired additional field.
- 3) Read the "Validate" barcode on Appendix IV to complete this setting.





# **Appendix VI**

# **KEYBOARD TYPE ONE-SCAN BARCODE**

**BLUETOOTH HID** PCAT (US) #@LH0001# PCAT (French) #@LH0002# PCAT (German) #@LH0003# PCAT (Italian) #@LH0004# PCAT (Swedish) #@LH0005# PCAT (Norwegian) #@LH0006# PCAT (UK) #@LH0007#

Appendix VI Keyboard Type One-scan Barcode





Appendix VI Keyboard Type One-scan Barcode



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Appendix VI Keyboard Type One-scan Barcode





Appendix VI Keyboard Type One-scan Barcode



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