CipherLab

User Guide

WR30 Wearable Ring Scanner

(Setup barcodes included)

Version 2.01

CIPHERLAB

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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

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

SAFETY PRECAUTIONS

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

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

CARE & 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
2.01	April 19, 2024	▸ Add the additional ways of the scanner firmware upgrade via WR30 Dongle and BT SPP in Appendix II ▸ Add the firmware upgrade of WR30 Dongle in Appendix II ▸ Rename "Shutdown Key" as "Restart Key" ▸ Delete Section 1.14 "illumination brightness" ▸ Remove SE4107 and SE4750MR readers from Section of "Specifications" and other related sections ▸ Modify the description of Step 2 related to the pairing of the ring scanner and mobile computer via NFC in Section 3.2.3
2.00	Mar. 01, 2024	▸ Modify the function of "Press down the shutdown key of the scanner for 15 seconds" ▸ Add new setup barcodes #@BH0064#~#@BH0095#for BLUETOOTH HID and change #@LH0001#~#@LH0049#as BLE HOGP HID setup barcodes in Appendix VI ▸ Modify the description and figures related to the firmware upgrade via IntelliWorker App in Appendix I ▸ 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
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 –

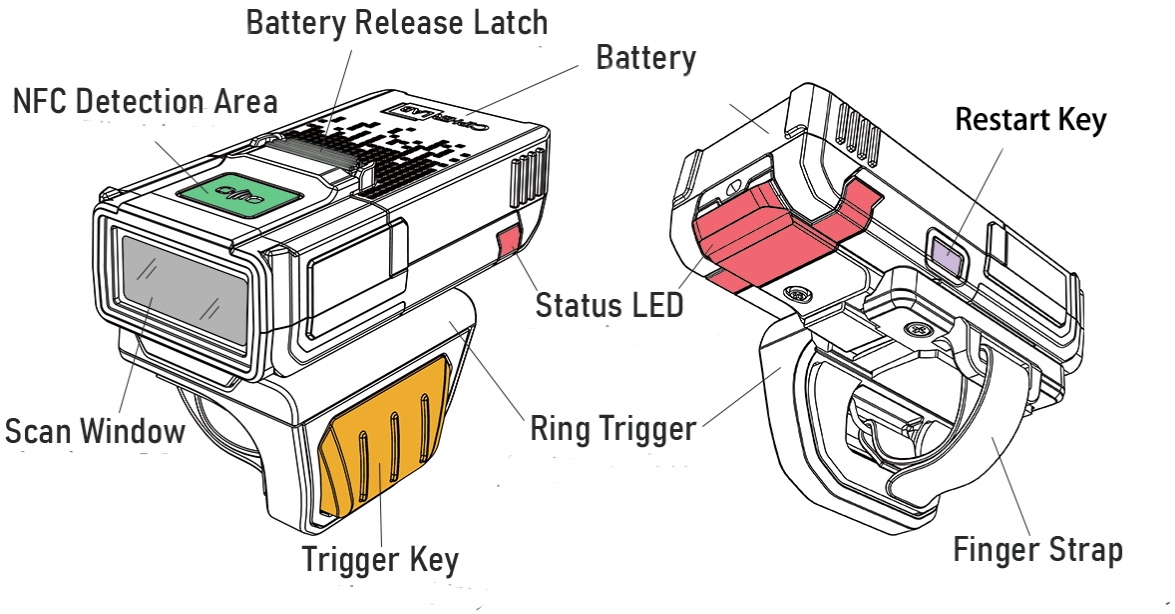
- Receiving in Retail
- Product labeling & Tracking
- Shelf Product Replenishment
- Mobile Point of Sale (POS)
- Mobile Inventory Management
- Order Picking & Staging
- Work-In-Process Tracking
- Material Flow Control
- Transportation & Distribution
- Warehousing
- Asset Management

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

Thank you for choosing CipherLab products!

GETTING FAMILIARIZED WITH THE SCANNER

OVERVIEW OF THE SCANNER



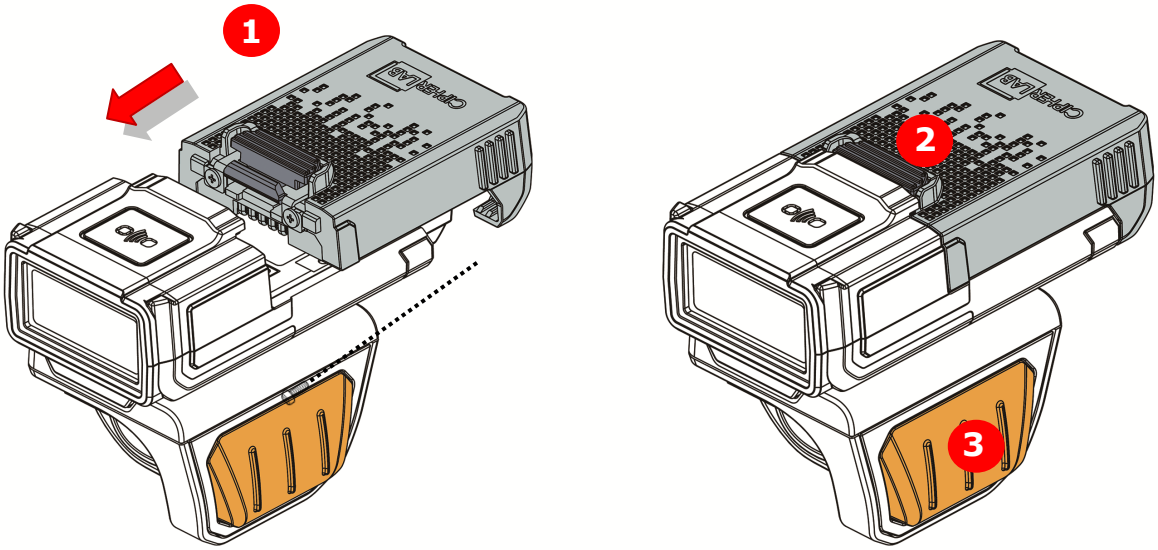
Enter Setup

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.

1) 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.



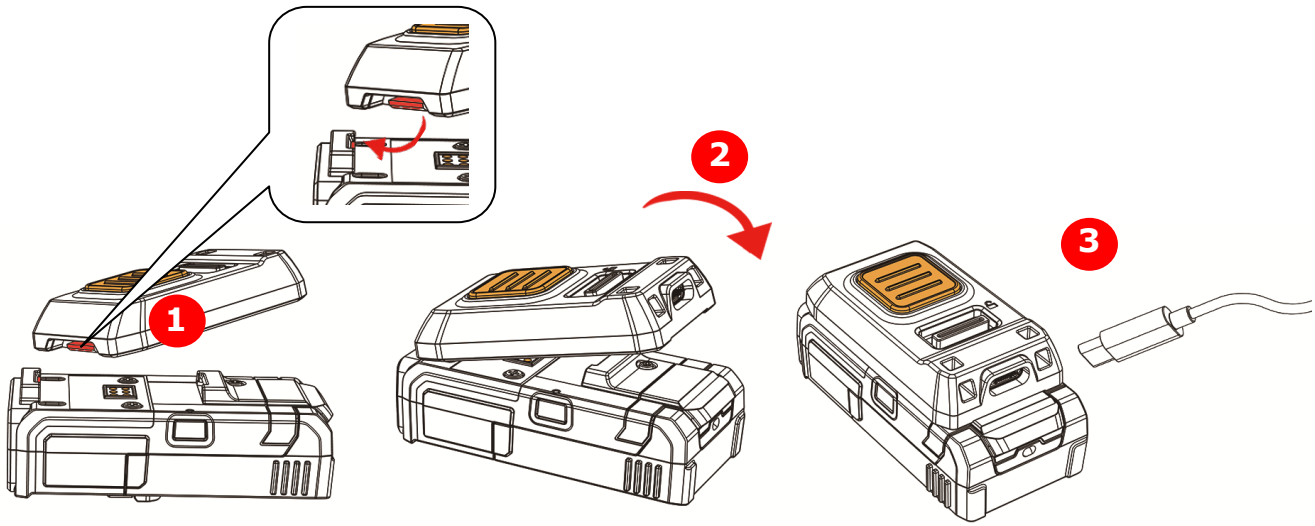
Note: (1) To turn off the scanner, remove the battery.
(2) For shipping and storage purposes, save the scanner and the battery separately. This will keep the battery in good condition for future use.
(3) When the battery charge becomes low, you will find the scanner cannot emit scan beam and its power-on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

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).

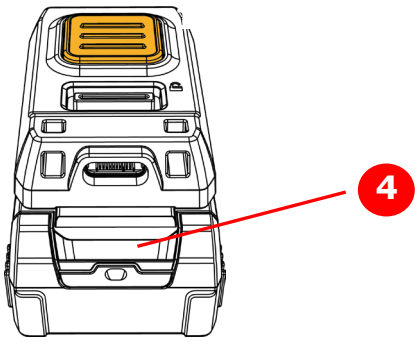
Note: Battery charging stops when the temperature drops below 0°C or exceeds 40°C. It is recommended to charge the battery at room temperature (18°C to 25°C) for optimal performance.

1) 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).



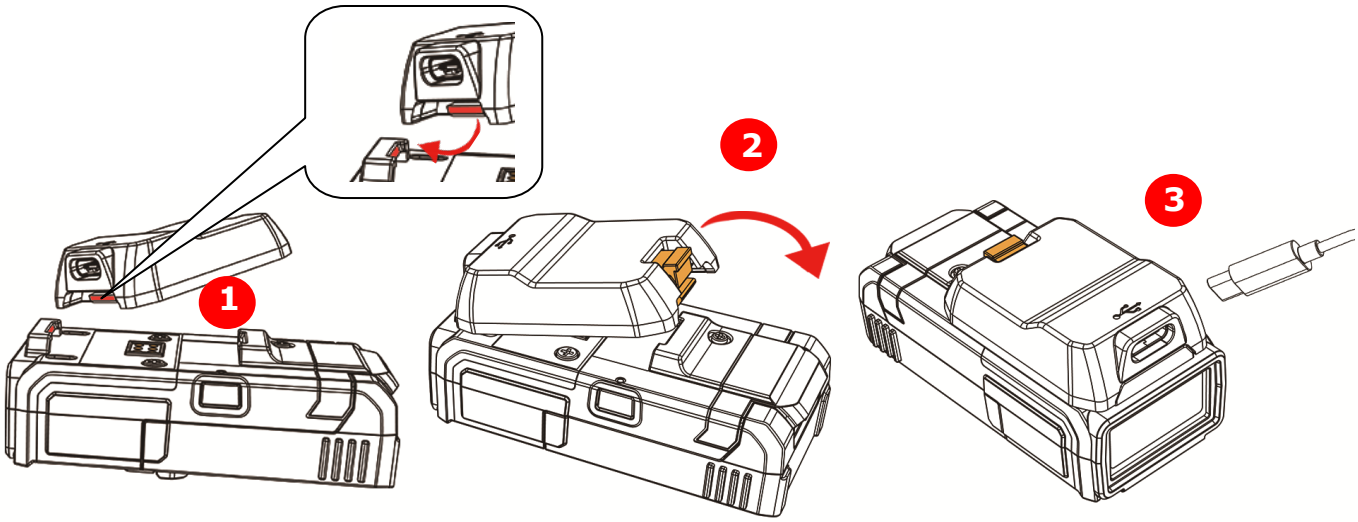
Enter Setup

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).

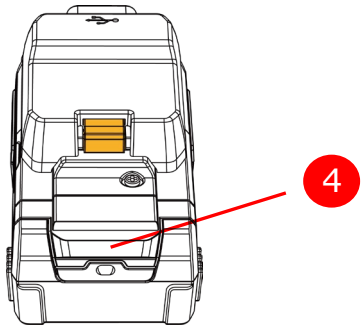
Note: Battery charging stops when the temperature drops below 0°C or exceeds 40°C. It is recommended to charge the battery at room temperature (18°C to 25°C) for optimal performance.

1) 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).

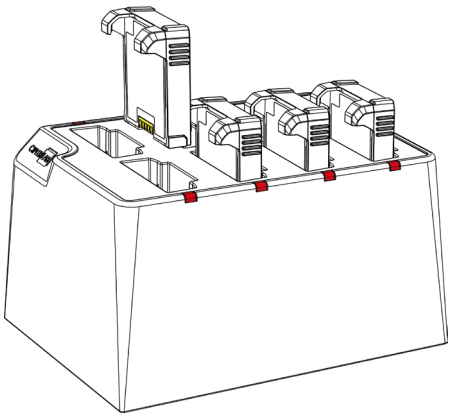


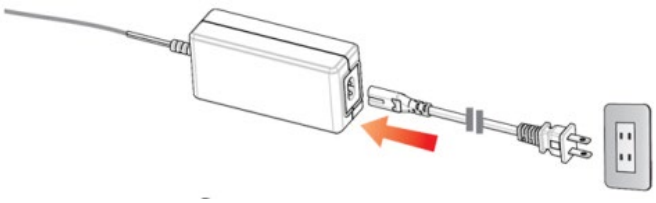
CHARGING THE BATTERY VIA 8-SLOT BATTERY CHARGER

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.

1) Connect the DC12 V power supply cord to the power connector of the 8-slot battery 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, flashing		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). ■ 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.

Enter Setup

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 (Optional)
- WR30 Dongle (Optional)
- WR30 Dongle RS232 (Optional)
- Hand Mount Glove With Side Trigger (Optional)
- WR30 4-Slot Charging Cradle with Battery Charger (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.
- 8 MB flash memory for Memory Mode operation, storing up to 480,000 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

- 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.

Enter Setup

SYMBOLOGIES SUPPORTED

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

Symbologies Supported: Enable/Disable		Default	
Codabar		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

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 Code	Composite CC-A/B		Disabled
	Composite CC-C		Disabled
	Composite TLC-39		Disabled
Postal Code	US Postnet	Enabled	
	US Planet	Enabled	
	UK Postal	Enabled	
	Japan Postal	Enabled	
	Australian Postal	Enabled	
	Dutch Postal	Enabled	
	USPS 4CB/One Code/Intelligent Mail		Disabled
	UPU FICS Postal		Disabled
2D Symbologies	PDF417	Enabled	
	MicroPDF417		Disabled
	Data Matrix	Enabled	
	Maxicode	Enabled	
	QR Code	Enabled	
	MicroQR	Enabled	
	Aztec	Enabled	

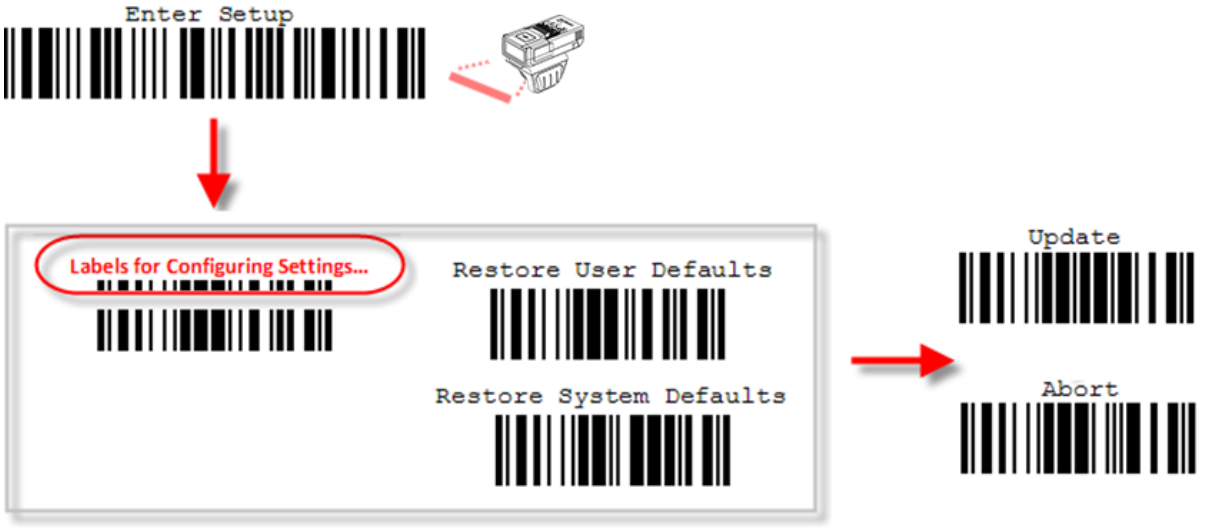
Enter Setup

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.

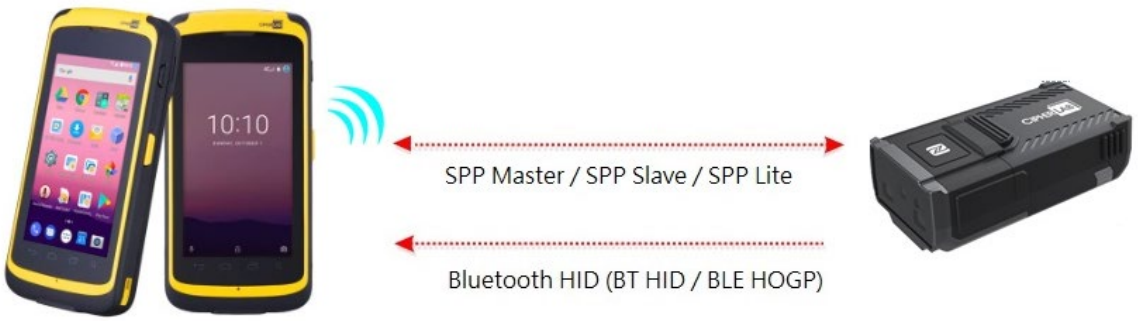


Note: Refer to Chapter 2 on how to select the output interface.

Update

Working Mode

Upon powering up, the scanner will try to establish a connection with a mobile computer or PC with *Bluetooth*® wireless technology. Refer to Chapter 3 Setting up a WPAN Connection 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 Setup

ENTER CONFIGURATION MODE

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

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

Enter Setup

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

EXIT CONFIGURATION MODE

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

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

Update

Abort

DEFAULT SETTINGS

SAVE USER SETTINGS AS DEFAULTS

For the scanner to keep the customized settings as user defaults, you must have it read the "Save as User Defaults" 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

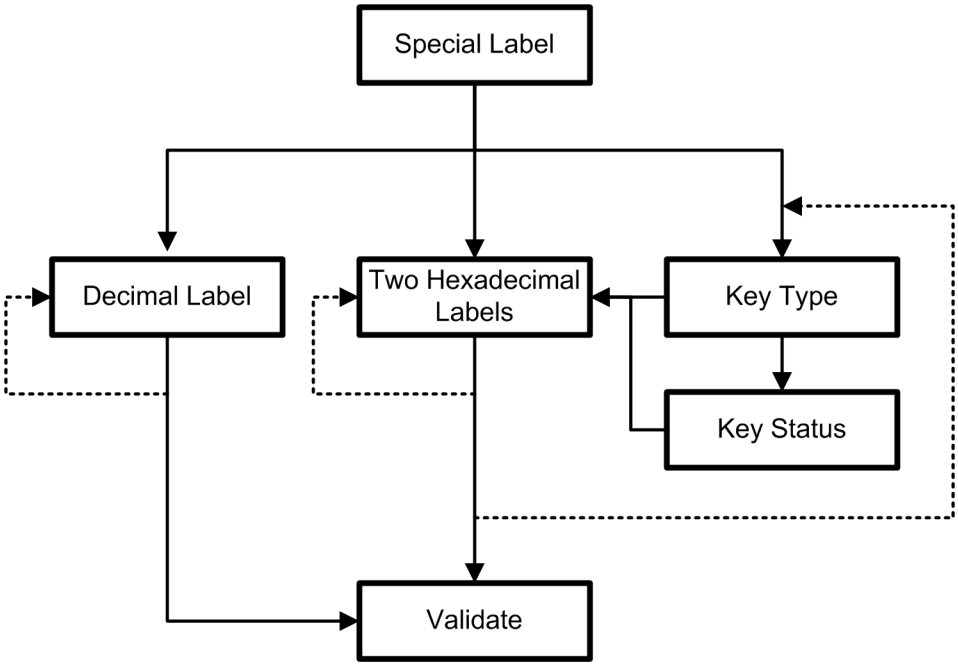
CONFIGURE PARAMETERS

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

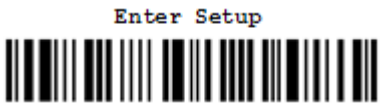
- Numeric barcodes, say, for keyboard type, inter-character delay, length qualification
- Hexadecimal barcodes, say, for character strings as prefix, suffix, etc.
- When "BT HID" or "USB HID" is configured as the interface, Key Type and Key Status will then become applicable. You may decide whether or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

Enter Setup

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



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

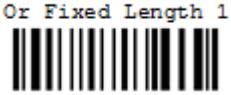
Steps	Action	User Feedback if Successful
1	Power on the scanner…	The scanner will respond with a long beep (high tone) and its LED indicator will become solid red and go off quickly.
2	Enter the Configuration Mode… 	The scanner will respond with six beeps (high-low tone repeats three times), and its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

Update

4	Exit the Configuration Mode…	Same as for *Enter the Configuration Mode*.
	OR	
5	The scanner will automatically restart itself…	Same as for *Power on the scanner*.
*	When any configuration error occurs...	The scanner will respond with one long beep (low tone).

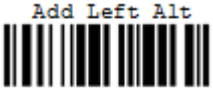
Enter Setup

The example below shows how to set numeric parameters:

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

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… Enter Setup 	The scanner will respond with six beeps (high-low tone repeats three times), and its LED indicator will become flashing red.
3	Read a Setup barcode... For example, Special setup barcodes Configure Prefix 101230	The scanner will respond with one short beep if reading a special setup barcode such as "Prefix Code", indicating the setup requires reading more barcodes.
	*Normal 109926	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
	Add Left Alt  109932	
	Hexadecimal barcodes 2 109902	Read the "Hexadecimal Value" 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"
	B 109911	
	Validate 109994	The scanner will respond with two beeps (low-high tone) when the input values are validated.
4	Exit the Configuration Mode… Update 109999 OR Abort 109998	Same as for *Enter the Configuration Mode*.
5	The scanner will automatically restart itself…	Same as for *Power on the scanner*.

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**	109950
List settings regarding Prefix, Suffix, and Length Code Setting (1/2)	**List Page 2**	109951
List settings regarding Prefix, Suffix, and Length Code Setting (2/2)	**List Page 3**	109952
List settings regarding Code ID	**List Page 4**	109953
List settings regarding: Readable Symbologies (1/2)	**List Page 5**	109954
List settings regarding: Readable Symbologies (2/2)	**List Page 6**	109955
List settings regarding Symbology Parameters (1/3)	**List Page 7**	109956
List settings regarding Symbology Parameters (2/3)	**List Page 8**	109957
List settings regarding Symbology Parameters (3/3)	**List Page 9**	109958

Update

List settings regarding Illumination Brightness	**List Page 10**	109959
List settings regarding Editing Format 1 (1/2)	**List Page 11**	109937
List settings regarding Editing Format 1 (2/2)	**List Page 12**	109938
List settings regarding Editing Format 2 (1/2)	**List Page 13**	109939
List settings regarding Editing Format 2 (2/2)	**List Page 14**	109940
List settings regarding Editing Format 3 (1/2)	**List Page 15**	109941
List settings regarding Editing Format 3 (2/2)	**List Page 16**	109942
List settings regarding Editing Format 4 (1/2)	**List Page 17**	109943
List settings regarding Editing Format 4 (2/2)	**List Page 18**	109944
List settings regarding Editing Format 5 (1/2)	**List Page 19**	109945
List settings regarding Editing Format 5 (2/2)	**List Page 20**	109946

Enter Setup

Lists settings of Driver License parsing **List Page 22**

109948

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

1) For example, the scanner needs reading three setup barcodes for the command parameter "109952" to take effect:

Enter Setup

List Page 3

109952

Update

109999

2) Now, it requires only one read:

One-Scan Setup Barcode for 109952

#@109952#

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):
#@CipherLab101231109902109903109994

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

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

Setup QR Code for configuring suffix

Enter Setup

Chapter 1

UNDERSTANDING THE RING SCANNER

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

IN THIS CHAPTER

1.1 Battery 24
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1.3 LED Indicator 32
1.4 Beeper..... 34
1.5 Send "NR" to Host..... 37
1.6 Scan Modes..... 37
1.7 Scanning Timeout 42
1.8 Delay between Re-read..... 43
1.9 Read Redundancy (1D)..... 44
1.10 Addon Security for UPC/EAN Barcodes 44
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1.12 Picklist Mode..... 45
1.13 Mobile Phone/Display Mode 45
1.14 Serial Number Stamp 46
1.15 2D Decode Settings..... 47
1.16 Vibrator Setup 47

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 on the scanner (by pressing the restart key)

Press down the restart key of the scanner for 15 seconds to turn on the scanner.

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 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**

Enter Setup

Disable

By default, the scanner is turned off after you press the trigger for 5 seconds. Have the scanner to read one of the barcodes below to specify the time.

Pull down trigger for 20 seconds

Pull down trigger for 15 seconds

Pull down trigger for 10 seconds

***Pull down trigger for 5 seconds**

Turn off the scanner (by scanning the barcode)

Scan the barcode below to turn off the scanner immediately.

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:

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

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)

1) Read the barcode above to enable the scanner to enter low-speed "Power-Saving".
2) Assign the time for the scanner to enter low-speed mode by reading the "Decimal Value" barcode on 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

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

- Auto Power Off: 1~254 minutes configurable. 0= Disable.
  1. By default, the scanner automatically shuts down 10 minutes after power-on.
  2. If Auto Power Off isn't desired, set the parameter to 0 to disable it.
  3. When the scan mode is set to 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.

Enter Setup

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)

1) Read the barcode above to enable the scanner to automatically turn off at a specified time after power-on.
2) Assign the auto power off time by reading the "Decimal Value" barcode on Appendix IV. For example, read "1" and "5" for the scanner to automatically turn off after idleness of 15 minutes.
3) Read the "Validate" 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:

1) Enable "Auto Power Off" and set a time for the scanner to automatically power off after power-on. See the foregoing section Section 1.1.2.2 Auto Power Off.
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".

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...

1. The scanner stays active for a specified period of time (2 minutes by default) for the following scenarios. The CPU runs at full speed, and the LED blinks blue (On/Off ratio 0.5 s: 0.5 s).

   (a) waiting for a connection request from the host (BT 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.

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

   Pull down the trigger for about 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...

1. Once a WPAN connection is established successfully, the scanner will stay active for a specified period of time (2 minutes by default) for data transmission. The CPU runs at full speed, and the LED blinks blue (On/Off ratio 0.02 s: 3 s).

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

Enter Setup

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**

101015

Disable

101016

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

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**

100111

Update

Disable

100110

1.2.2 MEMORY MODE

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

Enable

100237

***Disable**

100236

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

Memory Data Delay

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

***None**

100238

250 ms

100239

500 ms

100240

1 sec

100241

2 sec

100242

3 sec

100243

Enter Setup

5 sec

8 sec

Send Data

The 8 MB flash memory on the scanner can store up to 480,000 scans based on EAN-13 barcodes. When it is used up, the scanner will respond with two short beeps (high-low tone) as a warning.

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

Send Data

Clear Data & Confirm

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

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

Clear Data

Confirm

1.2.3 FREE MEMORY

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

Available Memory

1.2.4 RECORD COUNT OF MEMORY

You can scan the barcode below to show the data record count of the flash memory.

Data Record Count of Memory

Update

1.3 LED INDICATOR

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

Scanner LED			Meaning
Red, flashing	---	---	▸ Charging error(On/Off ratio 0.25 s: 0.25 s) ▸ 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) ▸ Memory full in memory mode, with two short beeps (high-low tone)
---	---	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

Enter Setup

			minutes).
---		Green, on-off	Press **Restart key** 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)

1) Read the barcode above to specify the time interval before the Good Read LED goes off.
2) Read the "Decimal Value" barcode on Appendix IV. For example, read "1" and "5" for the LED to go off after 150 milliseconds.
3) Read the "Validate" barcode on Appendix IV 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 ▸ Programmable, default to 4 KHz	Good Read, with green LED on-off quickly
Six short beeps ▸ High-low tone repeats three times	▸ Enter Configuration Mode, with red LED flashing ▸ Exit Configuration Mode
Two short beeps, low-high tone	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	▸ WPAN connection is established, with blue LED flashing ▸ WPAN connection is resumed, with blue LED flashing
Three short beeps, tone ascending from high to low	WPAN connection is out of range or suspended

Enter Setup

1.4.1 BEEPER VOLUME

Mute

101009

Minimum Volume

101010

Medium Volume

101011

***Maximum Volume**

101012

1.4.2 GOOD READ BEEP

Frequency

8 kHz

101001

***4 kHz**

101002

2 kHz

101003

1 kHz

101004

Duration

***Shortest**

101005

Update

Shorter

Longer

Longest

1.4.3 LOW BATTERY ALARM

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

***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

With this function enabled, the scanner will produce a bell ring when receiving the '0x07' ASCII character which is sent via BT SPP Slave, BT SPP Master, BLE SPP LITE、connect RS-232 through WR30 Dongle, connect USB VCOM CDC through WR30 Dongle or Direct USB VCOM CDC interface.

Enable

***Disable**

Enter Setup

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.

Disable

***Enable**

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 Scanning		
	Always	Press trigger once	Hold trigger	Press trigger twice	Release trigger	Release trigger	Barcode being read	Timeout
Test mode	✓							
Laser mode			✓			✓	✓	✓
Auto Off mode		✓					✓	✓

Update

Auto Power Off mode		✓						✓
Aiming mode (Original)				✓			✓	✓
Aiming mode (Always Aiming)			✓			✓	✓	✓
Aiming mode (Auto Aiming)			✓			✓	✓	✓
Multi-Barcode mode			✓			✓		
Release Mode					✓		✓	✓

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

Enter Setup

1.6.1 TEST MODE

The scanner is always scanning.

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

Test Mode

1.6.2 LASER MODE

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

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

Note: Refer to Section 1.7 Scanning Timeout.

***Laser Mode**

1.6.3 AUTO OFF MODE

The scanner will start scanning once the trigger is pressed.

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

Note: Refer to Section 1.7 Scanning Timeout.

Auto Off Mode

Update

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

100202

1.6.5 AIMING MODE

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

Aiming Mode

100208

Aiming Timeout

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

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

100226

1. Read the barcode above to specify the time interval before aiming ends. (It is set to 1 by default.)
2. Read the "Decimal Value" barcode on Appendix IV. For example, read "1" and "0" for the 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**

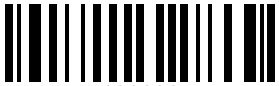
100231

ALWAYS AIMING:

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

Enter Setup

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) 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 Section 5.6 Multi-Barcode Editor.

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

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

1) Read the barcode above to specify the time interval before the scan engine times out.
2) Read the "Decimal Value" barcode on 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)

100 ms

200 ms

***400 ms**

800 ms

1 sec

2 sec

3 sec

5 sec

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.

***No Redundancy**

100262

One Time

100263

Two Times

100264

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 (2~16 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)

100380

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

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 decode only the barcodes aligned at the center under the laser aiming pattern.

Enable

***Disable**

1.13 MOBILE PHONE/DISPLAY MODE

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

***Disable**

Enable

1.14 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**

1.14.1 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

1) Read the barcode above to specify a separator character.
2) Read the "Hexadecimal Value" barcode on Appendix IV for the desired character.
3) Read the "Validate" barcode on Appendix IV to complete this setting.

Enter Setup

1.15 2D DECODE SETTINGS

1.15.1 AIMING PATTERN

Enable/Disable the aiming pattern during scanning.

***Enable**

Disable

1.15.2 DECODING ILLUMINATION

Enable/Disable illumination during scanning.

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

***Enable**

Disable

1.16 VIBRATOR SETUP

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

Update

0.1 Second

2 Second

0.2 Second

5 Second

*0.3 Second

0.5 Second

0.8 Second

1 Second

Enter Setup

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 –

1) 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.
5) Turn on your PC or mobile computer and establish a bluetooth connection with the scanner. Refer to Chapter 3 – Setting up a WPAN Connection for more details.

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

IN THIS CHAPTER

2.1 BT HID 50
2.2 BT SPP Slave 66
2.3 BT SPP Master 68
2.4 DIRECT USB VCOM CDC 73
2.5 Direct USB HID 75
2.6 RS-232 via WR30 Dongle 85
2.7 Connect USB HID via WR30 Dongle 88
2.8 Connect USB VCOM_CDC via WR30 Dongle 98

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)

Enter Setup

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…

100006

1) Read the barcode above to activate BT HID and select a keyboard type.
2) Read the "Decimal Value" 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.

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	Reserved
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

1) Read the barcode above to activate BLE HOGP HID and select a keyboard type.
2) Read the "Decimal Value" 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.

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

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

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.

***Normal**

AZERTY

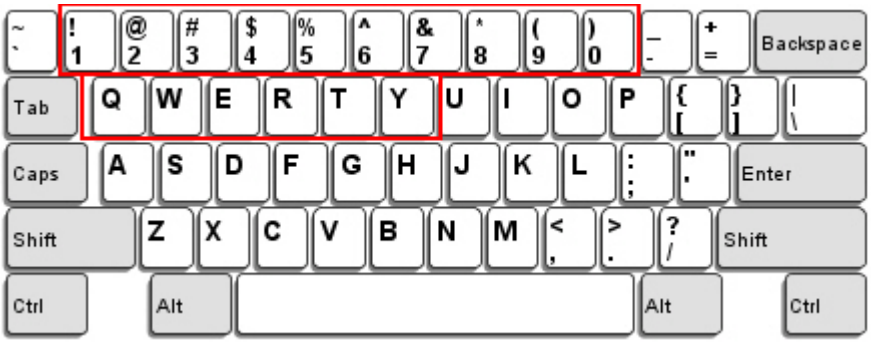
QWERTZ

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

Enter Setup

US Keyboard Style – Normal

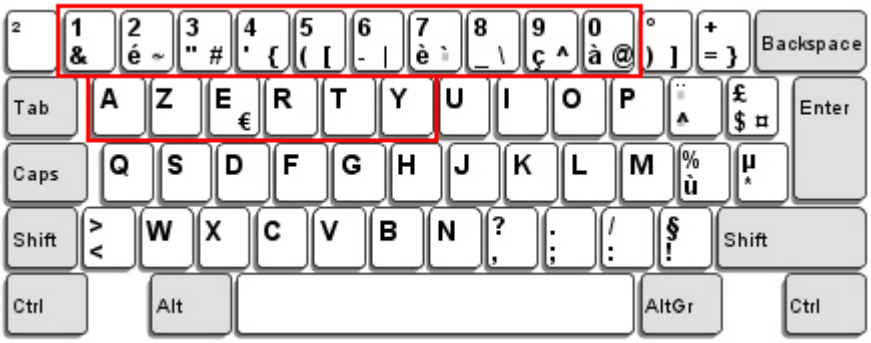
QWERTY layout, which is normally used in western countries.



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

French Keyboard Style – AZERTY

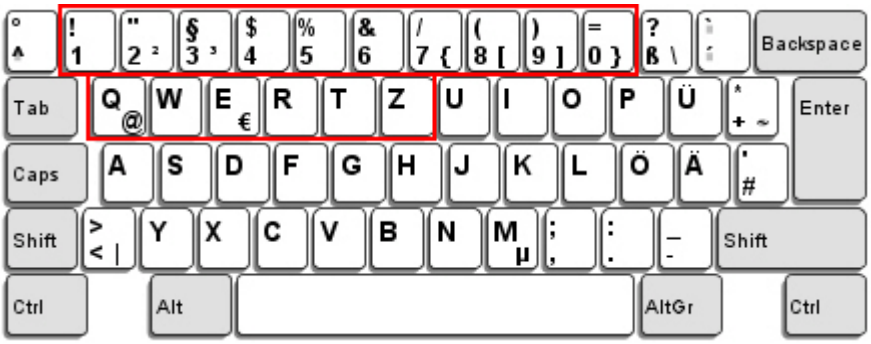
French layout; see below for French Keyboard Style.



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

German Keyboard Layout – QWERTZ

German layout; see below for German Keyboard Style.



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

Digits Layout

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

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

***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

Enter Setup

Capital Lock

100044

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

Auto Detect

100054

Capital Lock ON

100053

***Capital Lock OFF**

100052

Alphabets Transmission

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

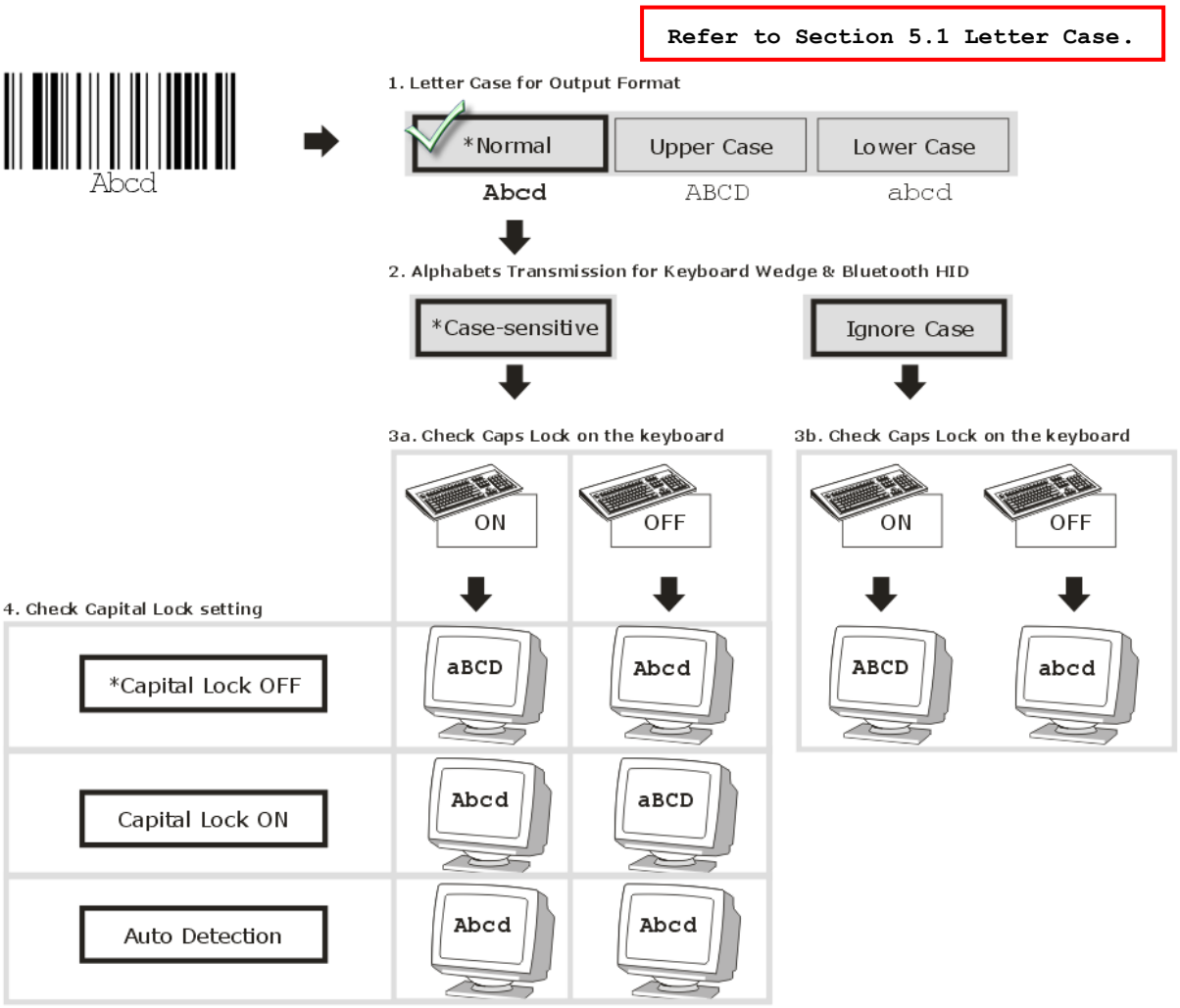
Ignore Case

100051

***Case-sensitive**

100050

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.

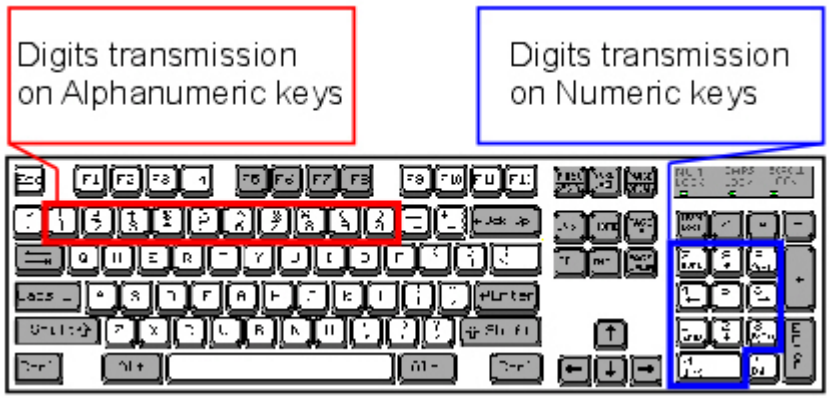
Numeric Key

100041

***Alphanumeric Key**

100040

Enter Setup



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:

Enable

100067

***Disable**

100066

ALT Composing

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

Yes

100057

***No**

100056

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)

1) Read the barcode above to specify the inter-character delay.
2) Read the "Decimal Value" barcode on Appendix IV for the desired inter-character delay (millisecond).
3) Read the "Validate" 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 ~ 0x1F) being transmitted. The longer the delay time is, the slower the transmission speed will be.

Inter-Function Delay… (*0~254)

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

Enter Setup

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

100064

***By Character**

100065

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

- 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.

Enable

100176

***Disable**

100175

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 Appendix III Keyboard Wedge Table 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

Enter Setup

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

101022

***Use Trigger Key to Show or Hide Keypad**

101023

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

2.1.10 TRANSMIT SPEED

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

Normal

100162

***Fast**

100163

Update

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

Disable

***Enable**

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

2.1.12 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.

***Auto reconnect immediately**

Auto reconnect on data being scanned

Auto reconnect off

2.1.13 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**

Enter Setup

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	Reserved
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)

2.2 BT SPP SLAVE

For BT SPP Slave, refer to Chapter 3 Setting up a WPAN Connection 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 ~ 0x1F) being transmitted. The longer the delay time is, the slower the transmission speed will be.

Inter-Function Delay… (*0~254)

1) Read the barcode above to specify the inter-function delay.
2) Read the "Decimal Value" barcode on Appendix IV for the desired inter-function delay (millisecond).
3) Read the "Validate" barcode on Appendix IV 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)

1) Read the barcode above to specify the time interval for the scanner to send data and wait for a response from the host.

Enter Setup

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

Enable Error Beep

100015

***Disable Error Beep**

100014

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

2.2.4 BT SPP SLAVE HARDWARE FLOW CONTROL

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

***Disable**

100173

Enable

100174

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

100035

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

Update

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 Section 3.3.2 Configure Related Settings (Not For BLE) 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 Section 1.1.3 Power Economy vs. WPAN Connection.

2.3.1 ACTIVATE BT SPP MASTER MODE

This is SPP Master Mode.

Activate *Bluetooth*® SPP, Master Mode

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

Produce two setup barcodes for the target SPP slave device.

- "Set Connection"
- "MAC ID"

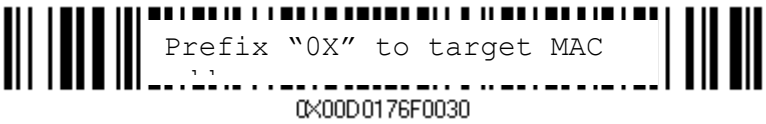
Note: The "MAC ID" barcode must have a prefix of two characters, either "0x" or "0X", followed by the real MAC address of the target device.

Usage:

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

2) Read the "Set Connection" and "MAC ID" barcodes. The scanner will respond with one beep upon reading each of the barcodes.

Set Connection



Enter Setup

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…

100150

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.
2) Read the "SeTcOnxxxxxxxxxxxx" 1D single barcode below. The scanner will respond with one beep upon reading the barcode.

SeTcOn00D0176F0030

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.

#@CipherLab88686471166254<u>0X</u><u>00D0176F0030</u>

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:

Update

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)

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

Enter Setup

2.3.3 ACK/NAK TIMEOUT

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

ACK/NAK Time-out after … (*0~99)

1) Read the barcode above to specify the time interval for the scanner to send data and wait for a response from the host.
2) Read the "Decimal Value" barcode on 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

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.

2.3.4 SWITCH BETWEEN MASTER/SLAVE MODES

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

***Auto reconnect immediately**

Auto reconnect on data scanned

Auto reconnect off

Enter Setup

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 ~ 0x1F) being transmitted. The longer the delay time is, the slower the transmission speed will be.

Inter-Function Delay… (*0~254)

1) Read the barcode above to specify the inter-function delay.
2) Read the "Decimal Value" barcode on Appendix IV for the desired inter-function delay (millisecond).
3) Read the "Validate" 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)

1) Read the barcode above to specify the time interval for the scanner to send data and wait for a response from the host.
2) Read the "Decimal Value" barcode on 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

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.

Enter Setup

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.

Activate Direct USB HID & Select Keyboard Type…

1) Read this barcode above to activate USB HID and select a keyboard type.
2) Read the "Decimal Value" 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.

Update

USB HID Keyboard Type

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

No.	Keyboard Type	No.	Keyboard Type
64	PCAT (US)	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)

Enter Setup

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.

***Normal**

AZERTY

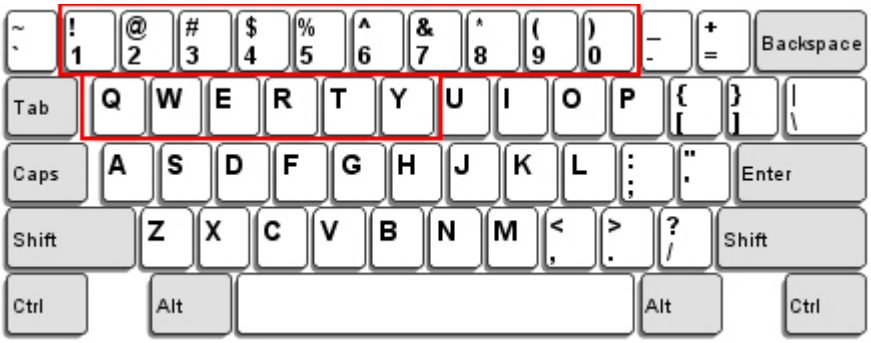
QWERTZ

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.

Update

US Keyboard Style – Normal

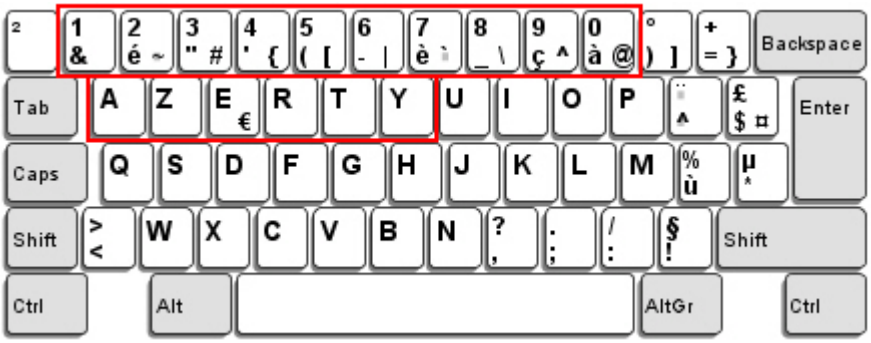
QWERTY layout, which is normally used in western countries.



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

French Keyboard Style – AZERTY

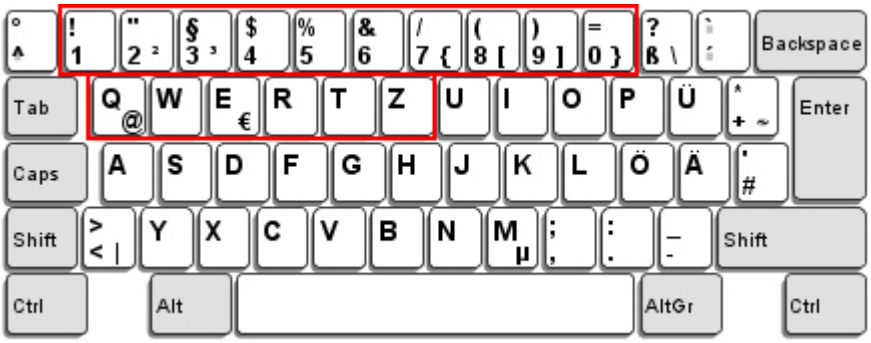
French layout; see below for French Keyboard Style.



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

German Keyboard Layout – QWERTZ

German layout; see below for German Keyboard Style.



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

Digits Layout

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

Update

Capital Lock

100044

Capital Lock State	Description
Capital Lock OFF	Assuming that the status of Caps Lock on the keyboard is OFF, transmitted characters are exactly the same as in the barcode (when "case-sensitive" is selected for Alphabets Transmission).
Capital Lock ON	Assuming that the status of Caps Lock on the keyboard is ON, transmitted characters are exactly the same as in the barcode (when "case-sensitive" is selected for Alphabets Transmission). ▸ Refer to the Caps/Shift Lock Type above.
Auto Detection	The scanner will automatically detect the status of Caps Lock on the keyboard before data is transmitted; transmitted characters are exactly the same as in the barcode (when "case-sensitive" is selected for Alphabets Transmission).

Auto Detect

100054

Capital Lock ON

100053

***Capital Lock OFF**

100052

Alphabets Transmission

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

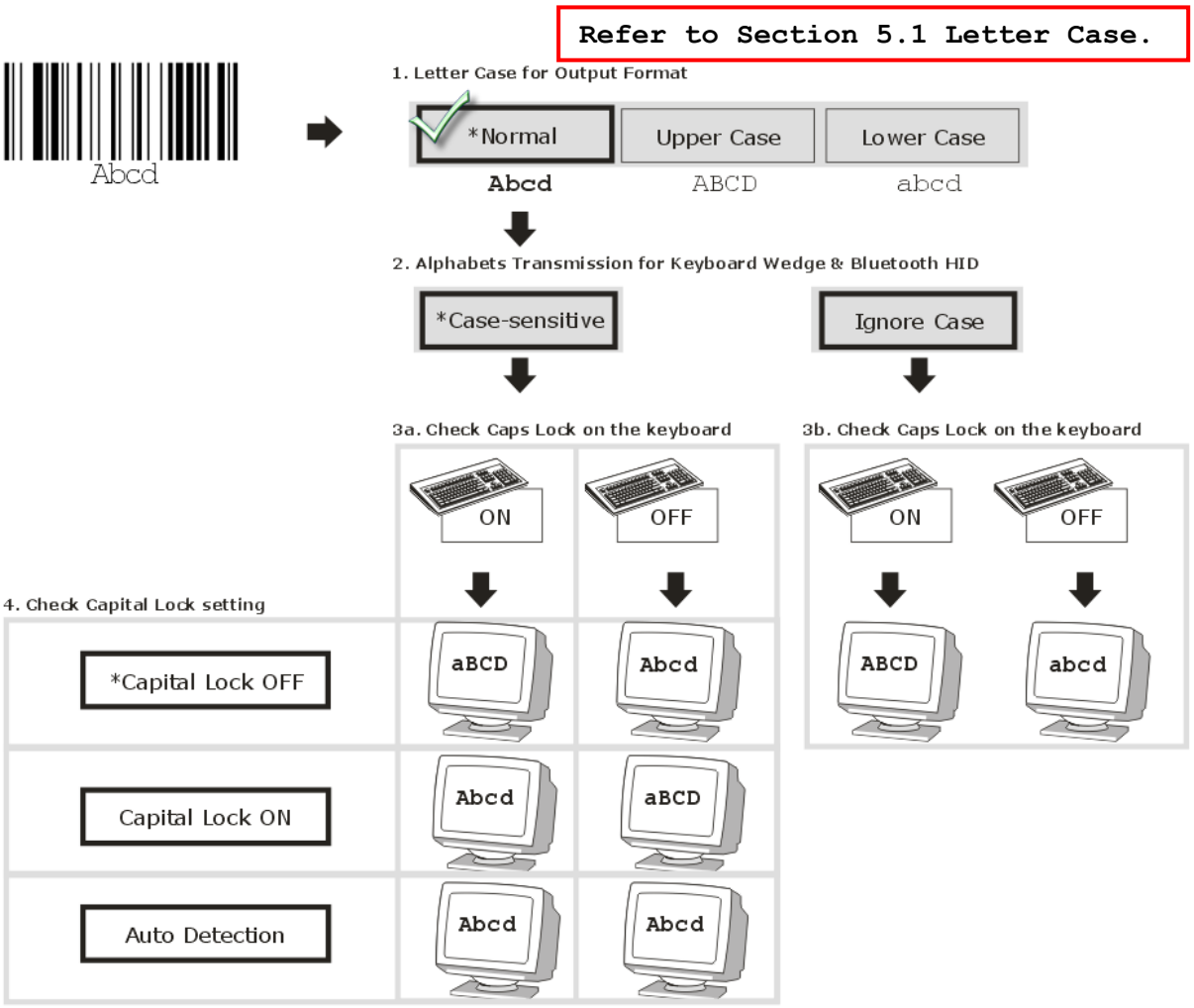
Ignore Case

100051

***Case-sensitive**

100050

Enter Setup



Digits Transmission

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

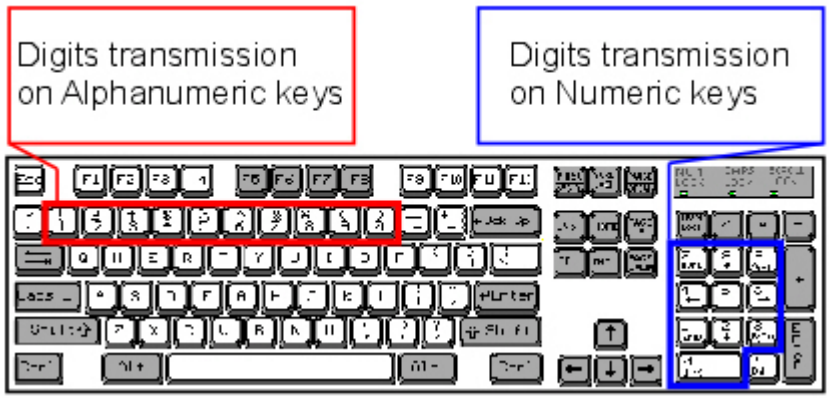
Numeric Key

100041

***Alphanumeric Key**

100040

Update



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

100067

***Disable**

100066

ALT Composing

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

Yes

100057

***No**

100056

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)

100011

1) Read the barcode above to specify the inter-character delay.
2) Read the "Decimal Value" 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 ~ 0x1F) being transmitted. The longer the delay time is, the slower the transmission speed will be.

Inter-Function Delay… (*0~254)

100012

1) Read the barcode above to specify the inter-function delay.
2) Read the "Decimal Value" barcode on 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

100064

***By Character**

100065

Update

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.

Enable

***Disable**

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**

Enter Setup

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

Activate RS-232 Interface

100001

2.6.2 BAUD RATE

***115200 bps**

100080

57600 bps

100081

38400 bps

100082

19200 bps

100083

9600 bps

100084

Update

4800 bps

2400 bps

1200 bps

2.6.3 PARITY

***No parity**

Even

2.6.4 INTER-FUNCTION DELAY

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

Inter-Function Delay… (*0~254)

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

Enter Setup

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)

1) Read the barcode above to specify the time interval for the scanner to send data and wait for a response from the host.
2) Read the "Decimal Value" barcode on 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

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.

2.7 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)

Enter Setup

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…

100005

1) Read the barcode above to activate USB HID and select a keyboard type.
2) Read the "Decimal Value" 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)		

Update

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.

***Normal**

AZERTY

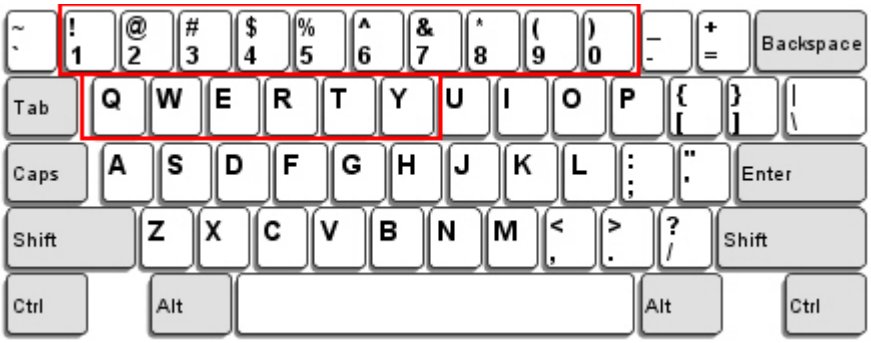
QWERTZ

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

Enter Setup

US Keyboard Style – Normal

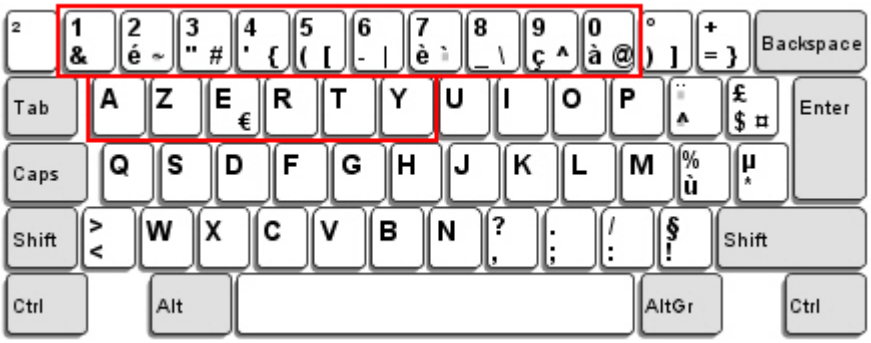
QWERTY layout, which is normally used in western countries.



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

French Keyboard Style – AZERTY

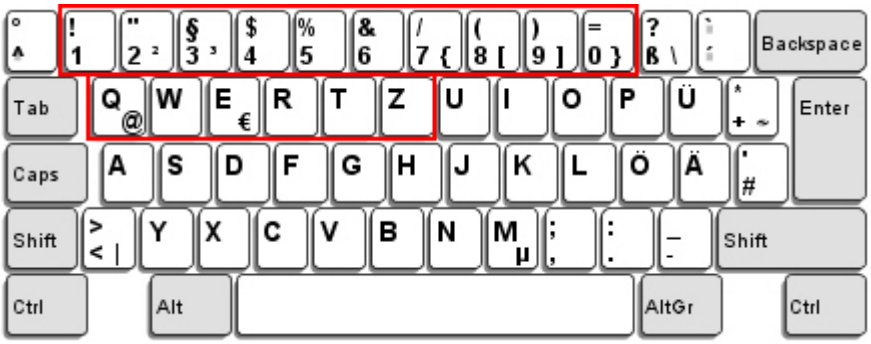
French layout; see below for French Keyboard Style.



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

German Keyboard Layout – QWERTZ

German layout; see below for German Keyboard Style.



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

Digits Layout

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

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

***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

Enter Setup

Capital Lock

100044

Capital Lock State	Description
Capital Lock OFF	Assuming that the status of Caps Lock on the keyboard is OFF, transmitted characters are exactly the same as in the barcode (when "case-sensitive" is selected for Alphabets Transmission).
Capital Lock ON	Assuming that the status of Caps Lock on the keyboard is ON, transmitted characters are exactly the same as in the barcode (when "case-sensitive" is selected for Alphabets Transmission). ▸ Refer to the Capital Lock Type above.
Auto Detection	The scanner will automatically detect the status of Caps Lock on the keyboard before data is transmitted; transmitted characters are exactly the same as in the barcode (when "case-sensitive" is selected for Alphabets Transmission).

Auto Detect

100054

Capital Lock ON

100053

***Capital Lock OFF**

100052

Alphabets Transmission

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

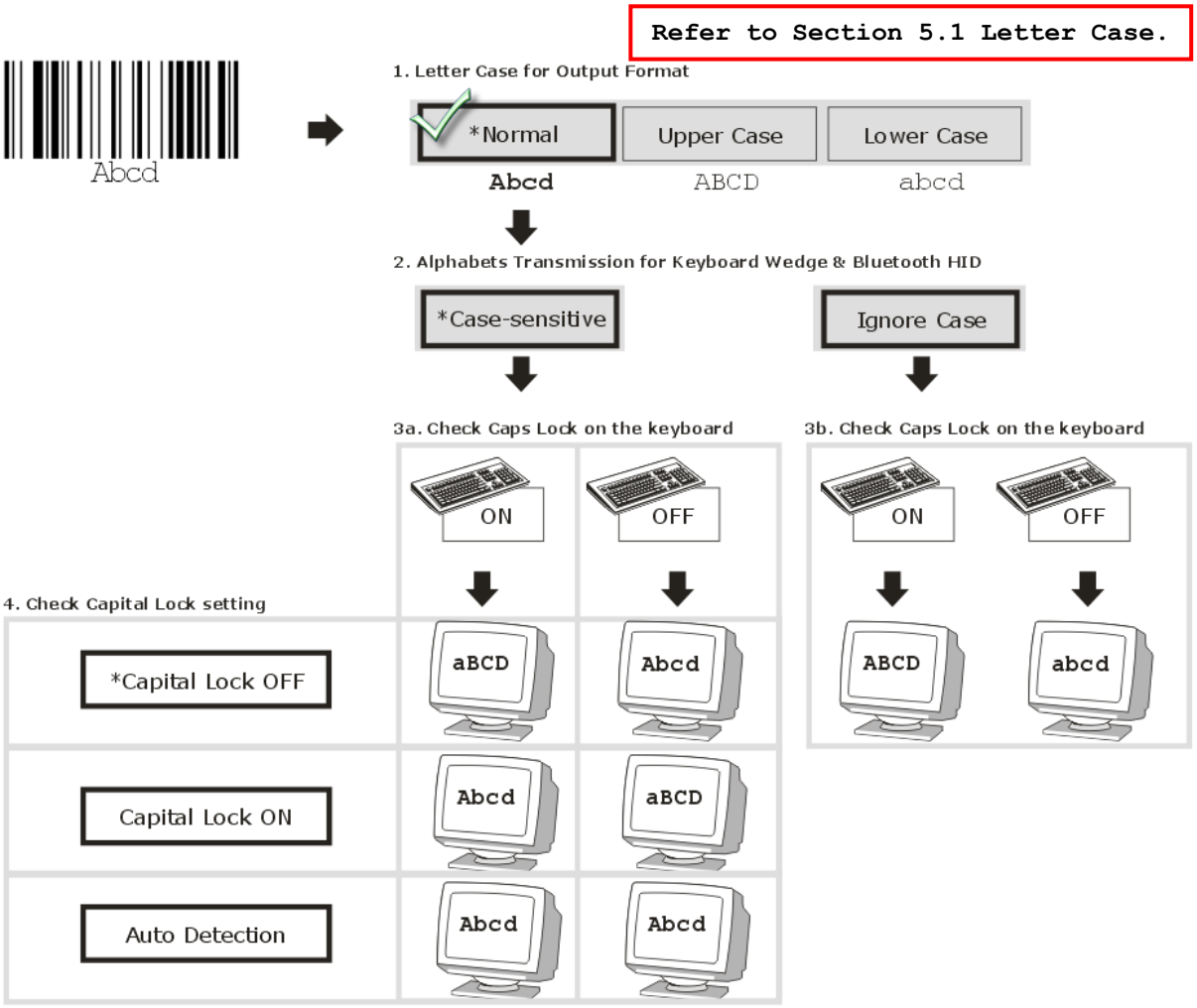
Ignore Case

100051

***Case-sensitive**

100050

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.

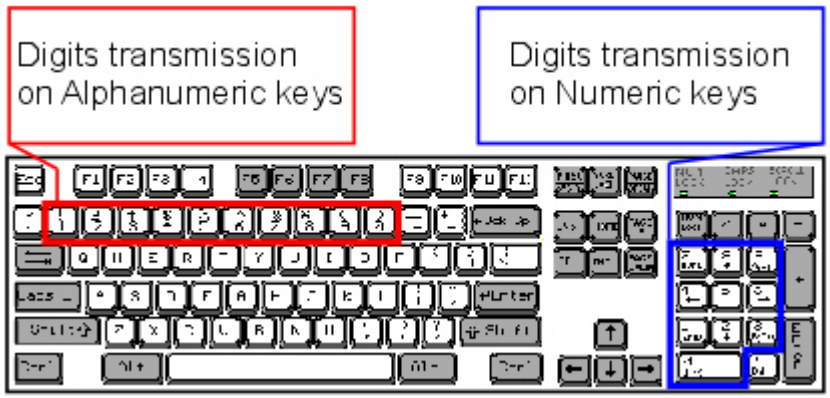
Numeric Key

100041

***Alphanumeric Key**

100040

Enter Setup



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:

Enable

100067

***Disable**

100066

ALT Composing

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

Yes

100057

***No**

100056

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)

100011

1) Read the barcode above to specify the inter-character delay.
2) Read the "Decimal Value" barcode on Appendix IV for the desired inter-character delay (millisecond).
3) Read the "Validate" barcode on Appendix IV 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 ~ 0x1F) being transmitted. The longer the delay time is, the slower the transmission speed will be.

Inter-Function Delay… (*0~254)

100012

1) Read the barcode above to specify the inter-function delay.
2) Read the "Decimal Value" barcode on Appendix IV for the desired inter-function delay (millisecond).
3) Read the "Validate" barcode on Appendix IV 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.

Batch Processing

100064

***By Character**

100065

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.

Enable

***Disable**

2.7.6 SPECIAL KEYBOARD FEATURE

Please refer to Section 2.1.8 Special Keyboard Feature.

2.7.7 USB HID 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 ondata being scanned

Auto reconnect off

2.7.8 UTF-8 CONVERSION

Please refer to Section 2.1.14 UTF-8 Conversion.

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

100031

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)

100012

1) Read the barcode above to specify the inter-function delay.
2) Read the "Decimal Value" barcode on Appendix IV for the desired inter-function delay (millisecond).
3) Read the "Validate" barcode on Appendix IV 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)

100013

1) Read the barcode above to specify the time interval for the scanner to send data and wait for a response from the host.
2) Read the "Decimal Value" barcode on 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.

Enter Setup

ACK/NAK Error Beep

Enable Error Beep

100015

***Disable Error Beep**

100014

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

2.8.4 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**

100168

Auto reconnect on data being scanned

100169

Auto reconnect off

100170

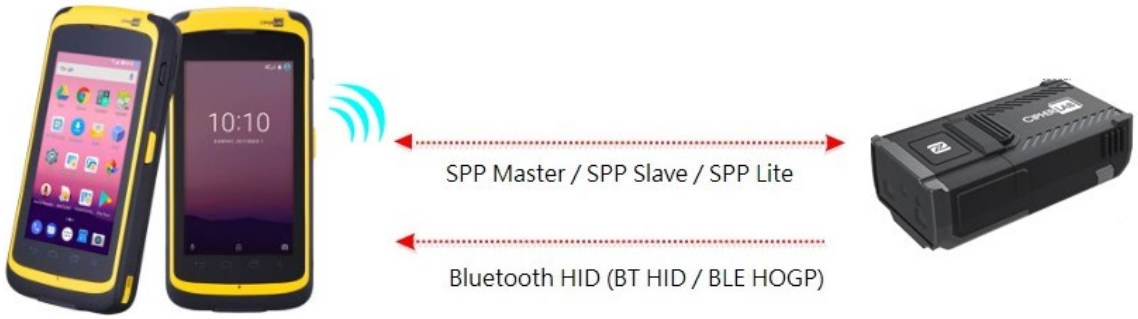
Update

Chapter 3

SETTING UP A WPAN CONNECTION

The scanner can be configured to send data to a mobile computer or PC with *Bluetooth*® wireless technology. Upon powering up, the scanner will be ready for establishing a WPAN connection.

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



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 ...

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 ...

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

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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 :

1) 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.

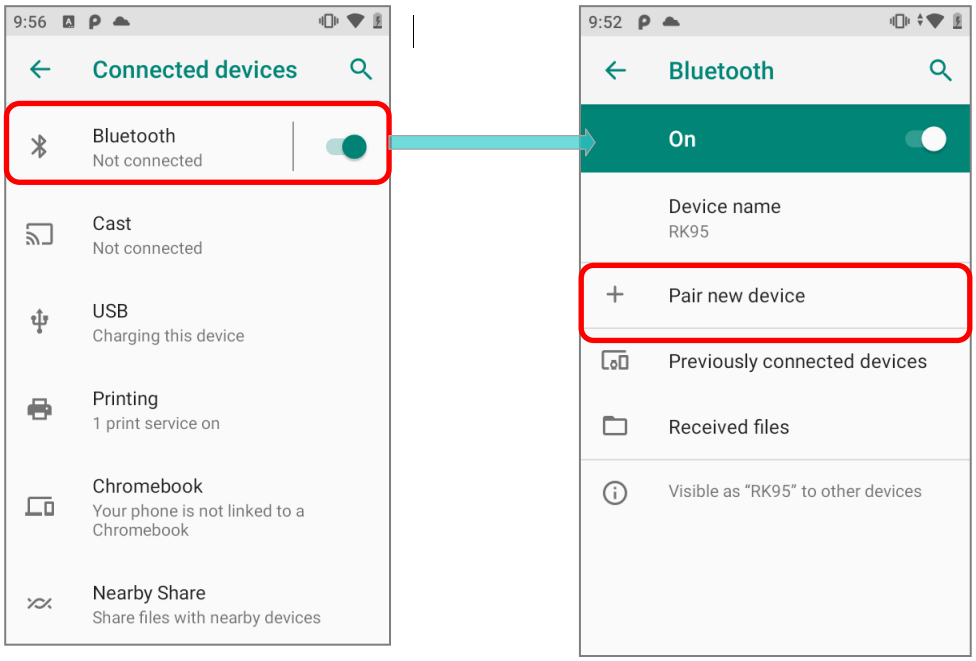
Procedures of BT HID Connection

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.

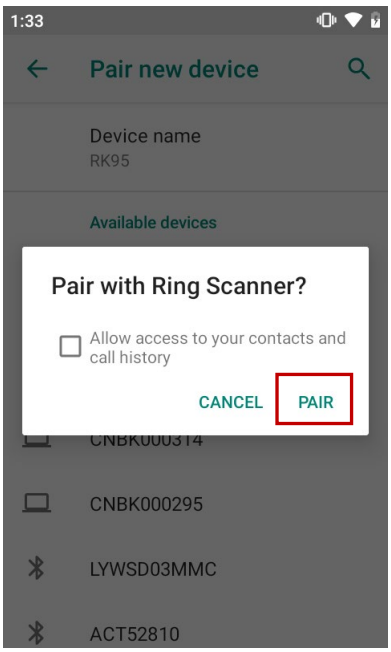
Refer to the following step-by-step instructions for BT HID pairing and connection. In the following instance, we take RK95 mobile computer for example to demostrate how to establish a bluetooh connection between the ring scanner and the mobile computer.

Enter Setup

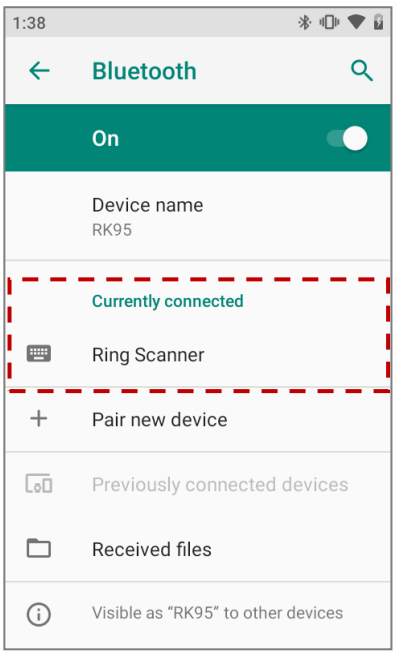
STEP 1. Enable the bluetooth function of the mobile computer by accessing **Settings**| **Connected devices**, and search for the ring scanner device to be connected by tapping on **Pair new device** function.



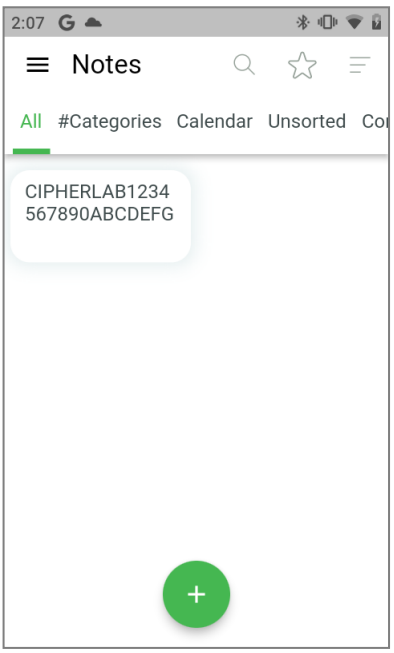
STEP 2. Tap on the searched ring scanner device to be paired, and then you will see a dialog prompt for confirmation. Tap **PAIR** to perform the bluetooth pairing.



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.



Enter Setup

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.

1) 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 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.

3.2.2 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

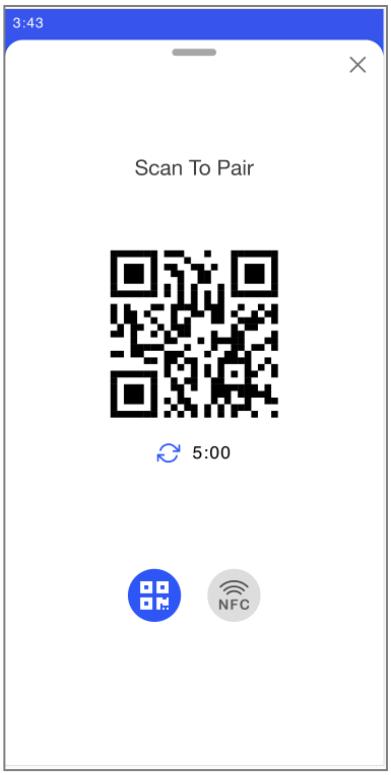
By default, the ring scanner uses BT HID and the keyboard type is configured as PCAT (US). If you choose to use BLE SPP LITE and need to switch it back to BT HID later, you must reset to use BT HID and select PCAT (US) or other country's keyboard as the keyboard type.

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

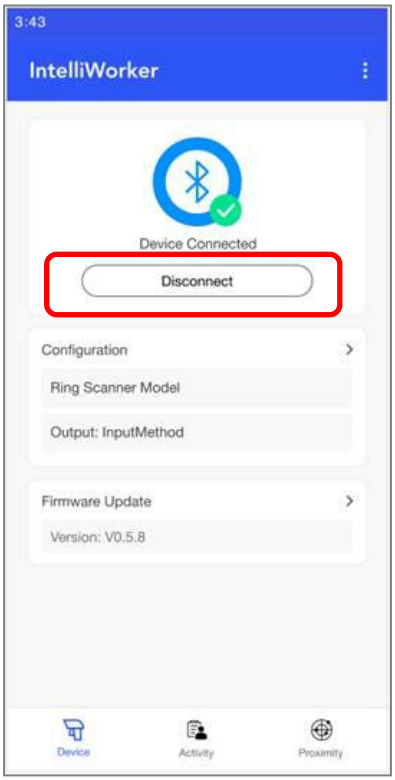
A random eight-code alphanumeric characters (0-9, A-Z) will be generated by **IntelliWorker** App. After having your ring scanner read the dedicated "Scan to Pair" QR Code of this App , the bluetooth device name belonging to this ring scanner will be changed as the one (e.g. X8YIQBPG) specified by the 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

Update



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 Restore System Defaults barcode.



Enter Setup

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.

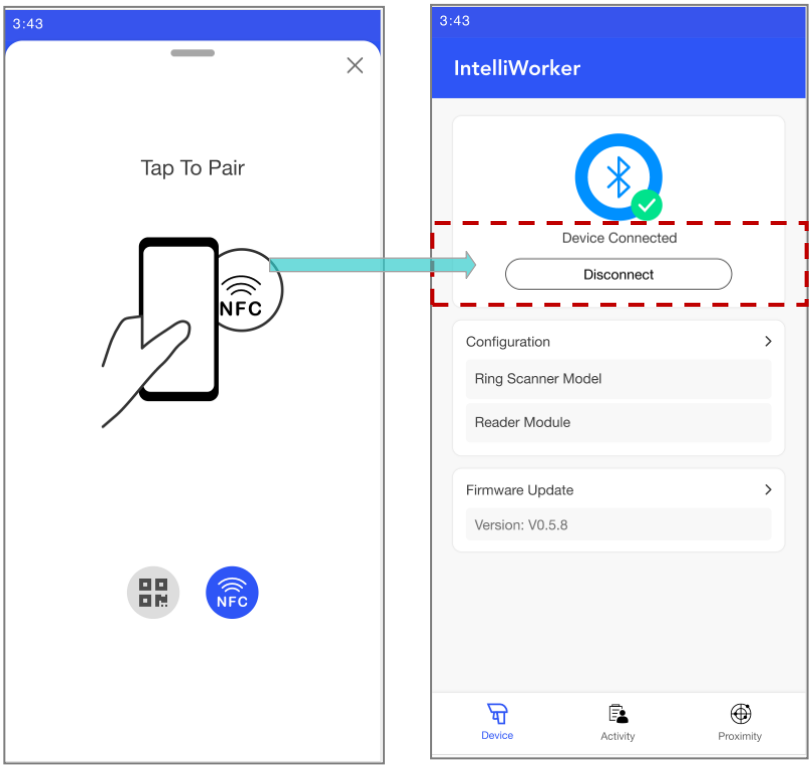
Procedures of BLE SPP LITE Pairing and Connection through NFC

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

STEP 2. On the launched **IntelliWorker** App, tap **NFC**

icon to enter the "Tap To Pair" screen. Now, place the bottom of the ring scanner close to the NFC area of the mobile computer 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.

For more instructions with regard to the **IntelliWorker** App, refer to IntelliWorker User’s Manual.



Update

3.3 CONNECT TO BT HID OF PC VIA BLUETOOTH DONGLE

3.3.1 CHANGE INTERFACE

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

1) 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 & 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.

Enter Setup

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**

100153

Disable

100152

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

Device Name Broadcasting

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

***Enable**

100157

Disable

100156

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

Changing Device Name

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

Change Bluetooth Local Hostname

100140

Update

1) 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**

Enter Setup

3.3.3 BUILD A CONNECTION USING BLUETOOTH DONGLE

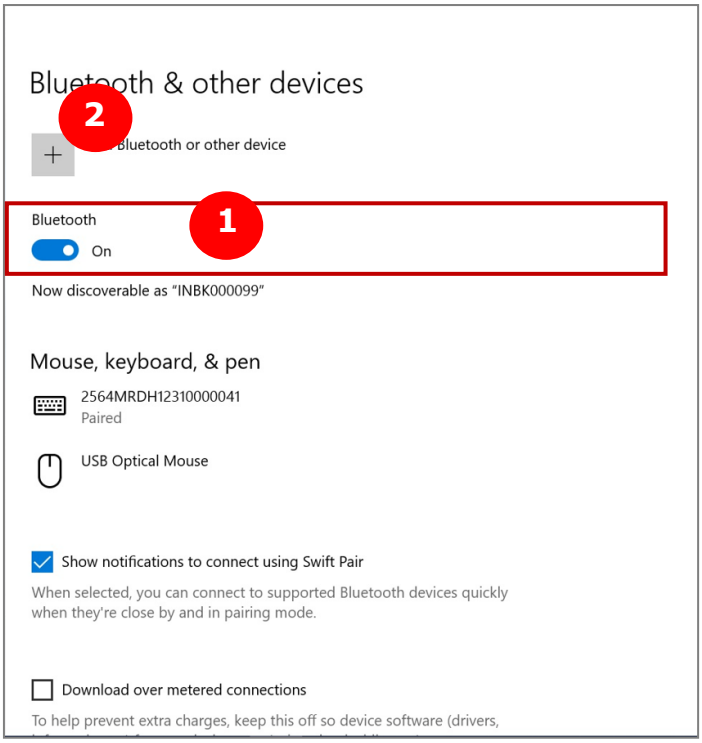
Generally speaking, just follow the instructions provided by the wizard of PC, a bluetooth connection between the ring scanner and PC can be established successfully after the pairing. The process of the pairing and connection may vary slightly upon the application you use.
If the operation system of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

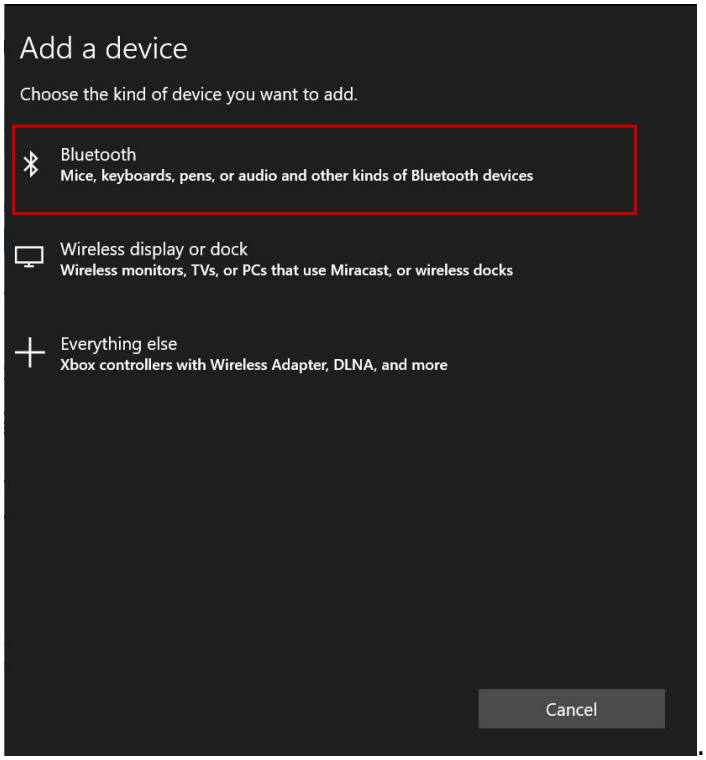
By default, the ring scanner uses BT HID and the keyboard type is configured as PCAT (US). If you choose to use BLE SPP LITE and need to switch it back to BT HID later, you must reset to use BT HID and select PCAT (US) or other country's keyboard as the keyboard type.

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.

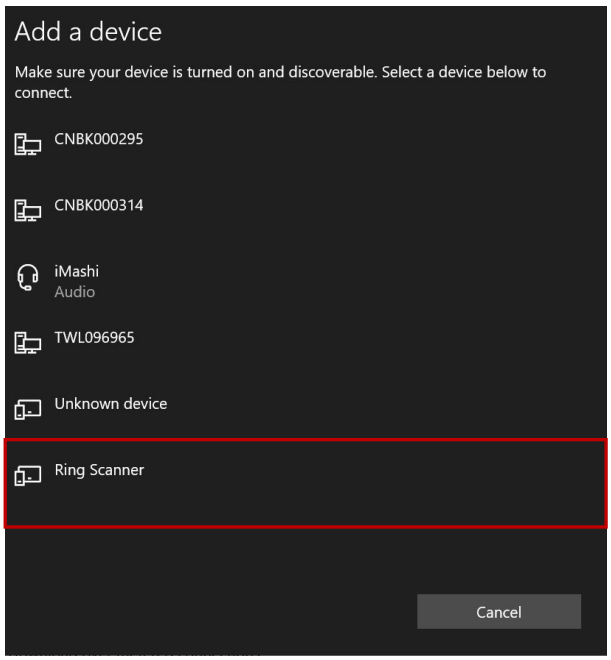
STEP 1. Go to **Start→Setup→Device**, and then the "Bluetooth & other devices" window will appear(see the figure below). Enable the bluetooth function and click + button to add a new bluetooth device.



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.

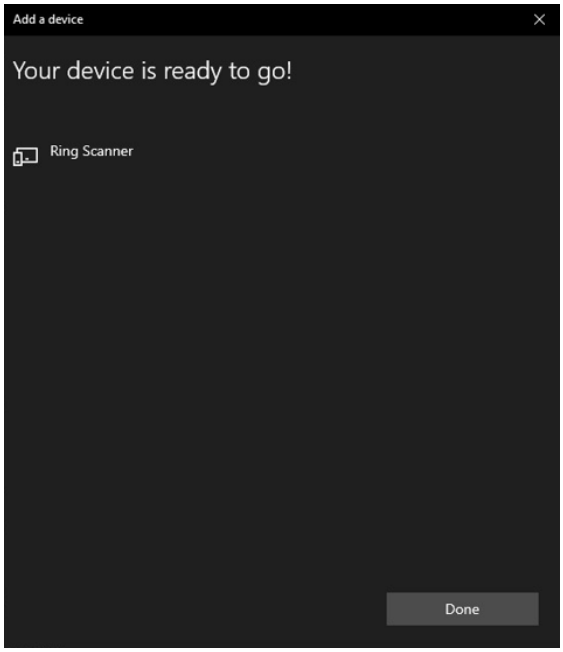


STEP 3. Click on the searched Ring Scanner to be paired.

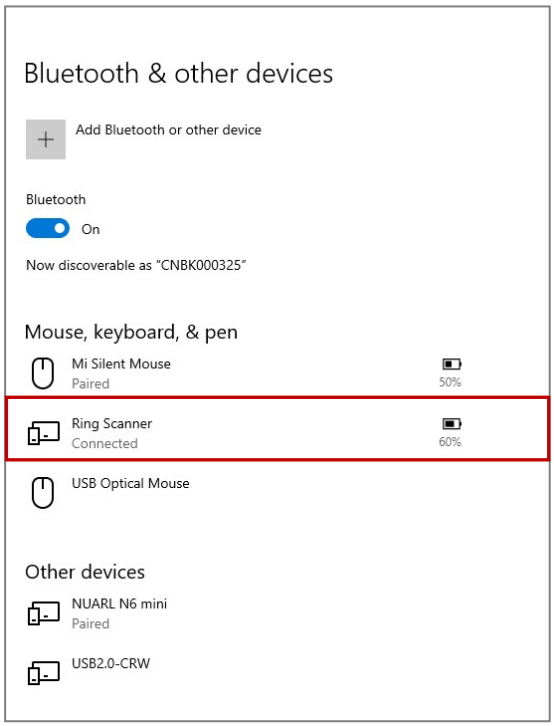


Enter Setup

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.



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.



3.4 ENTER PIN CODE FOR AUTHENTICATION

3.4.1 USE JUST WORKS

1) 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

1) 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.

Enter Setup

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!

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

Enter PIN in Decimal…

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

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.

- CrAdLeXXXXXXXXXXX
- 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.

1) Have all scanners read the "Set Connection" and "Serial Number" labels of WR30 Dongle.
2) 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.
4) 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 Section 2.7.1 Activate USB HID & Select Keyboard Type).
   - Activate Remote USB VCOM_CDC setup barcode (Refer to Section 2.8.1 Activate USB VCOM_CDC).
6) Have this scanner read the "Update" setup barcode to exit the configuration mode.
7) 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.
9) Updated with new settings, WR30 Dongle will pass these settings to other connected scanners.

Update

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.

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

Read this setting barcode (XXXXXXXXXXXX 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.

Enter Setup

Chapter 4

CHANGING SYMBOLOGY SETTINGS

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

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4.1 CODABAR

Decide whether to decode Codabar.

***Enable**

Disable

4.1.1 START/STOP TRANSMISSION

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

Transmit Start/Stop Characters

***Do Not Transmit**

4.1.2 CLSI CONVERSION

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

Apply CLSI Editing

***Do Not Apply**

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

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.

Enter Setup

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

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

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

***Enable Max./Min. Length (1~55)…**

Enable Fixed Length(s)…

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

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

Max. Length (*55) or Fixed Length 1

Min. Length (*4) or Fixed Length 2

3) Read the "Decimal Value" barcode on Appendix IV for the desired length.

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

4.2 CODE 25 – INDUSTRIAL 25

Decide whether to decode Industrial 25.

***Enable**

Disable

4.2.1 CODE LENGTH QUALIFICATION

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

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

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

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

***Enable Max./Min. Length (1~55)…**

Enable Fixed Length(s)…

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

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

Max. Length (*55) or Fixed Length 1

Min. Length (*4) or Fixed Length 2

3) Read the "Decimal Value" barcode on Appendix IV for the desired length.

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

Enter Setup

4.3 CODE 25 – INTERLEAVED 25

Decide whether to decode Interleaved 25.

***Enable**

Disable

4.3.1 VERIFY CHECK DIGIT

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

***Do Not Verify**

USS Check Digit

OPCC Check Digit

4.3.2 TRANSMIT CHECK DIGIT

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

***Transmit Interleaved 25 Check Digit**

Do Not Transmit

4.3.3 CONVERT TO EAN-13

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

- The barcode must have a leading 0 and a valid EAN-13 check digit.

- "Verify Check Digit" must be disabled.

Convert to EAN-13

102101

***Do Not Convert**

102100

4.3.4 CODE LENGTH QUALIFICATION

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

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

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

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

***Enable Max./Min. Length (1~55)…**

100605

Enable Fixed Length(s)…

100604

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

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

Max. Length (*55) or Fixed Length 1

100606

Min. Length (*4) or Fixed Length 2

100607

3) Read the "Decimal Value" barcode on Appendix IV for the desired length.

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

Enter Setup

4.4 CODE 25 – MATRIX 25

Decide whether to decode Matrix 25.

Enable

***Disable**

4.4.1 VERIFY CHECK DIGIT

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

Verify Matrix 25 Check Digit

***Do Not Verify**

4.4.2 TRANSMIT CHECK DIGIT

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

***Transmit Matrix 25 Check Digit**

Do Not Transmit

4.4.3 CODE LENGTH QUALIFICATION

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

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

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

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

***Enable Max./Min. Length (1~55)…**

100609

Enable Fixed Length(s)…

100608

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

Max. Length (*55) or Fixed Length 1

100610

Min. Length (*4) or Fixed Length 2

100611

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

Enter Setup

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 Pharmacode.

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.

Verify Code 39 Check Digit

100405

***Do Not Verify**

100404

4.7.2 TRANSMIT CHECK DIGIT

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

***Transmit Code 39 Check Digit**

100407

Do Not Transmit

100406

4.7.3 STANDARD/FULL ASCII CODE 39

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

Code 39 Full ASCII

100401

***Standard Code 39**

100400

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

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.

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

***Enable Max./Min. Length (1~55)…**

102218

Enable Fixed Length(s)…

102217

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

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

Max. Length (*55) or Fixed Length 1

102219

Min. Length (*4) or Fixed Length 2

102220

3) Read the "Decimal Value" barcode on Appendix IV for the desired length.

4) Read the "Validate" barcode on Appendix IV 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

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.

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

Enter Setup

***Enable Max./Min. Length (1~55)…**

Enable Fixed Length(s)…

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

Max. Length (*55) or Fixed Length 1

Min. Length (*4) or Fixed Length 2

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

Update

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 only when this setting is enabled.

4.11.1 TRANSMIT CODE ID

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

Transmit GS1-128 Code ID

***Do Not Transmit**

4.11.2 FIELD SEPARATOR (GS CHARACTER)

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

Enter Setup

Enable Field Separator…

100616

1) Read the barcode above to enable field separator.
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.

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

101496

***Disable GS1 Formatting**

101495

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.

AIMark1

100620

AIMark2

100621

1) Read the barcode above to add a mark to the left (AIMark1)/right (AIMark2) of an application ID.
2) Read the "Hexadecimal Value" 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.

Update

4.12 ISBT 128

Decide whether to decode ISBT 128.

***Enable**

Disable

4.12.1 ISBT CONCATENATION

Decide whether to decode and concatenate pairs of ISBT barcodes.

- Disable ISBT Concatenation

  It will not concatenate pairs of ISBT barcodes it encounters.

- Enable ISBT Concatenation

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

- Auto-discriminate ISBT Concatenation

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

Disable

Enable

***Auto-discriminate**

Enter Setup

4.12.2 ISBT CONCATENATION REDUNDANCY

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

ISBT Concatenation Redundancy 2~20 (*10)

1) Read the barcode above to specify the concatenation redundancy.
2) Read the "Decimal Value" barcode on Appendix IV for the desired redundancy.
3) Read the "Validate" barcode on Appendix IV 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:

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

Group II — GS1 DataBar Expanded (RSS Expanded)

This group consists of the following:

- GS1 DataBar Expanded
- GS1 DataBar Expanded Stacked

Group III — GS1 DataBar Limited (RSS Limited)

This group consists of the following:

- GS1 DataBar Limited

4.13.1 SELECT CODE ID

Select a desired Code ID to use:

- "]e0" (GS1 DataBar Code ID)
- "]C1" (GS1-128 Code ID)

Use "]C1"

100517

***Use "]e0"**

100516

4.13.2 GS1 DATABAR OMNIDIRECTIONAL (RSS-14)

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

100349

Disable

100348

Enter Setup

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

GS1 Formatting for GS1 DataBar Omnidirectional

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

***Disable GS1 Formatting**

Update

4.13.3 GS1 DATABAR EXPANDED (RSS EXPANDED)

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

Disable

When GS1 formatting for GS1 DataBar Expanded is enabled, code ID transmitting will be disabled.
The settings below apply to Group II symbologies only:

- GS1 DataBar Expanded
- GS1 DataBar Expanded Stacked

Transmit Code ID

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

Transmit RSS Expanded Code ID

***Do Not Transmit**

GS1 Formatting for GS1 DataBar Expanded

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

Enable GS1 Formatting

***Disable GS1 Formatting**

4.13.4 GS1 DATABAR LIMITED (RSS LIMITED)

***Enable RSS Limited (Group III)**

Disable

100350

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

Transmit Code ID

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

Transmit RSS Limited Code ID

100525

***Do Not Transmit**

100524

Transmit Application ID

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

***Transmit RSS Limited Application ID**

100531

Do Not Transmit

100530

GS1 Formatting for GS1 DataBar Limited

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

Enable GS1 Formatting

101488

***Disable GS1 Formatting**

101487

Update

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…

1) Read the barcode above to specify field separator.
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.

Enter Setup

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.

AIMark1

AIMark2

1) Read the barcode above to add a mark to the left (AIMark1)/right (AIMark2) of an application ID.

2) Read the "Hexadecimal Value" barcode on 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.

4.14 MSI

Decide whether to decode MSI.

Enable

100345

***Disable**

100344

4.14.1 VERIFY CHECK DIGIT

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

***Single Modulo 10**

100448

Double Modulo 10

100449

Modulo 10 & 11

100450

4.14.2 TRANSMIT CHECK DIGIT

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

***Last Digit Not Transmitted**

100452

Both Digits Transmitted

100453

Both Digits Not Transmitted

100454

Enter Setup

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.

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

***Enable Max./Min. Length (1~55)…**

100613

Enable Fixed Length(s)…

100612

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

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

Max. Length (*55) or Fixed Length 1

100614

Min. Length (*4) or Fixed Length 2

100615

3) Read the "Decimal Value" barcode on Appendix IV for the desired length.

4) Read the "Validate" barcode on Appendix IV 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 in the data being transmitted.

***Transmit EAN-8 Check Digit**

Do Not Transmit

Enter Setup

4.16 EAN-13

EAN-13

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

Disable

Decide whether to read EAN-13 barcodes ending with Addon 2.

EAN-13 Addon 2

Enable EAN-13 Addon 2

***Disable**

Decide whether to read EAN-13 barcodes ending with Addon 5.

EAN-13 Addon 5

Enable EAN-13 Addon 5

***Disable**

4.16.1 EAN-13 ADDON MODES

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

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

Enable

***Disable**

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

EAN-13 378/379 Addon Mode

Enable

***Disable**

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

EAN-13 977 Addon Mode

Enable

***Disable**

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

EAN-13 978 Addon Mode

Enable

***Disable**

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

Enter Setup

EAN-13 979 Addon Mode

Enable

***Disable**

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

EAN-13 491 Addon Mode

Enable

***Disable**

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

EAN-13 529 Addon Mode

Enable

***Disable**

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

EAN-13 Addon Mode Buzzer

Enable

101335

***Disable**

101334

4.16.2 CONVERT TO ISBN

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

Convert EAN-13 to ISBN

100463

***Do Not Convert**

100462

4.16.3 CONVERT TO ISSN

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

Convert EAN-13 to ISSN

100465

***Do Not Convert**

100464

4.16.4 TRANSMIT CHECK DIGIT

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

***Transmit EAN-13 Check Digit**

100473

Enter Setup

Do Not Transmit

100472

4.17 UCC COUPON EXTENDED CODE

Decide whether to decode the following barcodes as Coupon Code.

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

Enable

102003

***Disable**

102002

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

4.18 UPC-A

UPC-A

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

100339

Disable

100338

UPC-A Addon 2

Enable UPC-A Addon 2

100341

***Disable**

100340

Update

UPC-A Addon 5

Enable UPC-A Addon 5

***Disable**

4.18.1 CONVERT TO EAN-13

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

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

Convert UPC-A to EAN-13

***Do Not Convert**

4.18.2 TRANSMIT SYSTEM NUMBER

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

***Transmit UPC-A System Number**

Do Not Transmit

4.18.3 TRANSMIT CHECK DIGIT

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

***Transmit UPC-A Check Digit**

Do Not Transmit

4.19 UPC-E

UPC-E

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

Disable

UPC-E Addon 2

Enable UPC-E Addon 2

***Disable**

UPC-E Addon 5

Enable UPC-E Addon 5

***Disable**

4.19.1 SELECT SYSTEM NUMBER

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

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

Update

System Number 0 & 1

***System Number 0 Only**

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

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**

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**

Enter Setup

Do Not Transmit

Update

4.20 CODE 11

Decide whether to decode Code 11.

Enable

***Disable**

4.20.1 VERIFY CHECK DIGIT

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

Verify One Check Digit

Verify Two Check Digit

***Do Not Verify**

4.20.2 TRANSMIT CHECK DIGIT

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

Transmit Code 11 Check Digit

***Do Not Transmit**

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

Enter Setup

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.

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

***Enable Max./Min. Length (1~55)…**

102234

Enable Fixed Length(s)…

102233

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

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

Max. Length (*55) or Fixed Length 1

102235

Min. Length (*4) or Fixed Length 2

102236

3) Read the "Decimal Value" barcode on Appendix IV for the desired length.

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

Update

4.21 COMPOSITE CODE

4.21.1 COMPOSITE CC-A/B

Decide whether to enable Composite CC-A/B

Enable Composite CC-A/B

102009

***Disable**

102008

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

Enable GS1 Formatting

101492

***Disable GS1 Formatting**

101491

4.21.2 COMPOSITE CC-C

Decide whether to enable Composite CC-C.

Enable Composite CC-C

102011

***Disable**

102010

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

Enable GS1 Formatting

101494

***Disable GS1 Formatting**

101493

Enter Setup

4.21.3 COMPOSITE TLC-39

Decide whether to enable Composite TLC-39.

Enable Composite TLC-39

***Disable**

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

***UPC Always Linked**

Auto-discriminate

Update

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…

1) Read the barcode above to specify field separator.
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.

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

1) Read the barcode above to add a mark to the left (AIMark1)/right (AIMark2) of an application ID.
2) Read the "Hexadecimal System" barcode on 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.

Enter Setup

4.22 US POSTAL CODE

4.22.1 US POSTNET

Decide whether to decode US Postnet.

***Enable US Postnet**

Disable

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 transmitted.

***Transmit US Postal Check Digit**

Do Not Transmit

4.23 UK POSTAL CODE

4.23.1 UK POSTAL

Decide whether to decode UK Postal.

***Enable UK Postal**

102021

Disable

102020

4.23.2 TRANSMIT CHECK DIGIT

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

***Transmit UK Postal Check Digit**

102109

Do Not Transmit

102108

4.24 MORE POSTAL CODE

4.24.1 JAPAN POSTAL

Decide whether to decode Japan Postal.

***Enable Japan Postal**

102023

Disable

102022

Enter Setup

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

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**

Update

4.25 2D SYMBOLOGIES

4.25.1 PDF417

Decide whether to decode PDF417.

***Enable PDF417**

Disable

4.25.2 MicroPDF417

Decide whether to decode MicroPDF417.

Enable MicroPDF417

***Disable**

4.25.3 DATA MATRIX

Decide whether to decode Data Matrix.

***Enable Data Matrix**

Disable

GS1 FORMATTING

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

Enable

Enter Setup

***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…

1) Read the barcode above to specify field separator.
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.

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.

AIMark1

AIMark2

1) Read the barcode above to add a mark to the left (AIMark1)/right (AIMark2) of an application ID.
2) Read the "Hexadecimal Value" barcode on 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.

Update

ECI INFORMATION

Users can determine whether to show the embedded ECI information when scanning a barcode.

Enable

102563

***Disable**

102562

4.25.4 MAXICODE

Decide whether to decode Maxicode.

***Enable Maxicode**

102039

Disable

102038

4.25.5 QR CODE

Decide whether to decode QR Code.

***Enable QR Code**

102041

Disable

102040

GS1 FORMATTING

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

Enable

101472

Enter Setup

***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…

1) Read the barcode above to specify field separator.
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.

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.

AIMark1

AIMark2

1) Read the barcode above to add a mark to the left (AIMark1)/right (AIMark2) of an application ID.
2) Read the "Hexadecimal Value" barcode on 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.

Update

4.25.6 MicroQR

Decide whether to decode Micro QR.

***Enable MicroQR**

102043

Disable

102042

4.25.7 AZTEC

Decide whether to decode Aztec.

***Enable Aztec**

102045

Disable

102044

Enter Setup

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**

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

102198

***None**

102196

4.26.3 TRANSMIT CONTROL HEADER

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

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

Transmit Control Header

102195

***Do Not Transmit**

102194

Enter Setup

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 –

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

IN THIS CHAPTER

5.1 Letter Case 170
5.2 Character Substitution 170
5.3 Prefix/Suffix Code 184
5.4 Code ID 185
5.5 Length Code 192
5.6 Multi-Barcode Editor 200
5.7 Removal of Special Character 203
5.8 AIM Code ID 204

5.1 LETTER CASE

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

***Normal**

Upper Case

Lower Case

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, Key Type and Key Status will then become applicable. You may decide whether to apply Key Status when "Normal Key" is selected as Key Type.

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

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

Enter Setup

5.2.1 SINGLE CHARACTER SUBSTITUTION

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

Configure Set 1

Configure Set 2

Configure Set 3

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

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

2) Read the "Hexadecimal Value" barcode on Appendix IV 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".

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

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	101224	**Set 1 Replacement String**	101225

Configure Set 2

Set 2 Target String	101226	**Set 2 Replacement String**	101227

Configure Set 3

Set 3 Target String	101228	**Set 3 Replacement String**	101229

Please follow steps below:

1) 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 "Hexadecimal Value" barcode on Appendix IV for the desired characters.

2) Read the "Validate" barcode on Appendix IV 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 "Hexadecimal Value" barcode on Appendix IV for the desired characters. For example,

4) Read the "Validate" barcode on Appendix IV 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.

Enter Setup

4. Read the Replacement String barcode.
5. Read "2", "A", "2", "A", "2", and "A" barcodes to specify the replacement string "***" (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

Enter Setup

Character Substitution for Code 128

*Apply

101257

Do Not Apply

101256

Character Substitution for GS1-128

*Apply

101259

Do Not Apply

101258

Character Substitution for ISBT 128

*Apply

101293

Do Not Apply

101292

Character Substitution for EAN-8 (No Addon)

*Apply

101267

Do Not Apply

101266

Character Substitution for EAN-8 Addon 2

*Apply

101269

Do Not Apply

101268

Update

Character Substitution for EAN-8 Addon 5

*Apply

101271

Do Not Apply

101270

Character Substitution for EAN-13 (No Addon)

*Apply

101273

Do Not Apply

101272

Character Substitution for EAN-13 Addon 2

*Apply

101275

Do Not Apply

101274

Character Substitution for EAN-13 Addon 5

*Apply

101277

Do Not Apply

101276

Character Substitution for Italian Pharmacode

*Apply

101243

Do Not Apply

101242

Enter Setup

Character Substitution for Industrial 25

*Apply

101247

Do Not Apply

101246

Character Substitution for Interleaved 25

*Apply

101249

Do Not Apply

101248

Character Substitution for Matrix 25

*Apply

101251

Do Not Apply

101250

Character Substitution for Chinese 25

*Apply

102617

Do Not Apply

102616

Character Substitution for MSI

*Apply

101285

Do Not Apply

101284

Update

Character Substitution for GS1 DataBar

*Apply

101291

Do Not Apply

101290

Character Substitution for UPC-A (No Addon)

*Apply

101279

Do Not Apply

101278

Character Substitution for UPC-A Addon 2

*Apply

101281

Do Not Apply

101280

Character Substitution for UPC-A Addon 5

*Apply

101283

Do Not Apply

101282

Character Substitution for UPC-E (No Addon)

*Apply

101261

Do Not Apply

101260

Enter Setup

Character Substitution for UPC-E Addon 2

*Apply

101263

Do Not Apply

101262

Character Substitution for UPC-E Addon 5

*Apply

101265

Do Not Apply

101264

Character Substitution for UCC Coupon Extended Code

*Apply

102605

Do Not Apply

102604

Character Substitution for Code 11

*Apply

102609

Do Not Apply

102608

Character Substitution for Composite CC-A/B

*Apply

102611

Do Not Apply

102610

Update

Character Substitution for Composite CC-C

*Apply

102613

Do Not Apply

102612

Character Substitution for Composite TLC-39

*Apply

102615

Do Not Apply

102614

Character Substitution for US Postnet

*Apply

102619

Do Not Apply

102618

Character Substitution for US Planet

*Apply

102621

Do Not Apply

102620

Character Substitution for UK Postal

*Apply

102623

Do Not Apply

102622

Enter Setup

Character Substitution for Japan Postal

*Apply

102625

Do Not Apply

102624

Character Substitution for Australian Postal

*Apply

102627

Do Not Apply

102626

Character Substitution for Dutch Postal

*Apply

102629

Do Not Apply

102628

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

*Apply

102631

Do Not Apply

102630

Character Substitution for UPU FICS Postal

*Apply

102633

Do Not Apply

102632

Update

Character Substitution for PDF417

*Apply

Do Not Apply

Character Substitution for MicroPDF417

*Apply

Do Not Apply

Character Substitution for Data Matrix

*Apply

Do Not Apply

Character Substitution for Maxicode

*Apply

Do Not Apply

Character Substitution for QR Code

*Apply

Do Not Apply

Enter Setup

Character Substitution for MicroQR

***Apply**

Do Not Apply

Character Substitution for Aztec

***Apply**

Do Not Apply

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, Key Type and Key Status will then become applicable. You may decide whether to apply Key Status when "Normal Key" is selected as Key Type.

Key Type		Key Status
Scan Code	Up to 4 scan code values are allowed.	N/A
Normal Key	Up to 8 character strings are allowed.	▸ 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

101230

Configure Suffix

101231

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

Enter Setup

5.4 CODE ID

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

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

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

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

5.4.1 SELECT PRE-DEFINED CODE ID

Apply Code ID Set 1

Apply Code ID Set 2

Apply Code ID Set 3

Apply Code ID Set 4

Apply Code ID Set 5

Update

Code ID options	Set 1	Set 2	Set 3	Set 4	Set 5
Code 39	A	C	Y	M	A
Trioptic Code 39	A	C	Y	M	X
Italian Pharmacode	A	C	Y	M	A
Industrial 25	C	H	H	H	S
Interleaved 25	D	I	Z	I	S
Matrix 25	E	G	G	G	S
Chinese 25	Q	M	P	S	X
Codabar	F	N	X	N	F
Code 93	I	L	L	L	G
Code 128	H	K	K	K	C
ISBT 128	H	K	K	K	C
UPC-E	S	E	C	E	E
EAN-8	P	B	B	FF	E
EAN-13	M	A	A	F	E
UPC-A	J	A	A	A	E
MSI	V	V	D	P	M
UCC Coupon Code	G	F	I	C	C
Code 11	K	J	J	D	H
Composite CC-A/B	L	X	M	J	La
Composite CC-C	N	Y	N	O	Lc
Composite TLC-39	O	Z	O	R	L2
US Postnet	h	a	s	i	X
US Planet	i	b	t	j	X
UK Postal	j	c	u	k	X
Japan Postal	k	d	v	l	X
Australian Postal	l	e	w	m	X
Dutch Postal	m	f	x	n	X
USPS 4 CB / One Code / Intelligent Mail	n	g	y	o	X
UPU FICS Postal	o	h	z	p	X
PDF417	a	O	W	T	L
MicroPDF417	b	P	V	U	L
Data Matrix	c	Q	U	V	d
Maxicode	d	R	T	W	U

Enter Setup

QR Code	e	S	S	X	Q
MicroQR	f	T	R	Y	Q
Aztec	g	U	Q	Z	z
IATA	z	z	r	h	S
Macro PDF417	p	i	a	q	L
Macro MicroPDF417	q	j	b	r	L

Update

5.4.2 CHANGE CODE ID

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

Configure Code ID for Codabar

Configure Code ID for Code 39

Configure Code ID for Trioptic Code 39

Configure Code ID for Code 93

Configure Code ID for Code 128

Configure Code ID for ISBT 128

Configure Code ID for EAN-8

Configure Code ID for EAN-13

Configure Code ID for Italian Pharmacode

Configure Code ID for Industrial 25

Enter Setup

Configure Code ID for Interleaved 25

Configure Code ID for Matrix 25

Configure Code ID for Chinese 25

Configure Code ID for MSI

Configure Code ID for UPC-A

Configure Code ID for UPC-E

Configure Code ID for UCC Coupon Code

Configure Code ID for Code 11

Configure Code ID for Composite CC-A/B

Configure Code ID for Composite CC-C

Configure Code ID for Composite TLC-39

Configure Code ID for US Postnet

Configure Code ID for US Planet

Configure Code ID for UK Postal

Configure Code ID for Japan Postal

Configure Code ID for Australian Postal

Configure Code ID for Dutch Postal

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

Configure Code ID for UPU FICS Postal

Configure Code ID for PDF417

Configure Code ID for MicroPDF417

Configure Code ID for Data Matrix

Configure Code ID for Maxicode

Configure Code ID for QR Code

Enter Setup

Configure Code ID for MicroQR

Configure Code ID for Aztec

Configure Code ID for IATA

Configure Code ID for Macro PDF417

Configure Code ID for Macro MicroPDF417

5.4.3 CLEAR CODE ID SETTINGS

Clear All Code ID Settings

5.5 LENGTH CODE

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

Length Code for Codabar

Apply

101413

***Do Not Apply**

101412

Length Code for Code 39

Apply

101401

***Do Not Apply**

101400

Length Code for Trioptic Code 39

Apply

102505

***Do Not Apply**

102504

Length Code for Code 93

Apply

101415

***Do Not Apply**

101414

Enter Setup

Length Code for Code 128

Apply

101417

***Do Not Apply**

101416

Length Code for GS1-128 & GS1 DataBar

Apply

101419

***Do Not Apply**

101418

Length Code for ISBT 128

Apply

101435

***Do Not Apply**

101434

Length Code for EAN-8

Apply

101423

***Do Not Apply**

101422

Length Code for EAN-13

Apply

101425

Update

*Do Not Apply

101424

Length Code for Italian Pharmacode

Apply

101403

*Do Not Apply

101402

Length Code for Industrial 25

Apply

101407

*Do Not Apply

101406

Length Code for Interleaved 25

Apply

101409

*Do Not Apply

101408

Length Code for Matrix 25

Apply

101411

*Do Not Apply

101410

Length Code for Chinese 25

Apply

102515

Enter Setup

*Do Not Apply

102514

Length Code for MSI

Apply

101429

*Do Not Apply

101428

Length Code for UPC-A

Apply

101427

*Do Not Apply

101426

Length Code for UPC-E

Apply

101421

*Do Not Apply

101420

Length Code for UCC Coupon Extended Code

Apply

102503

*Do Not Apply

102502

Length Code for Code 11

Apply

102507

Update

*Do Not Apply

102506

Length Code for Composite CC-A/B

Apply

102509

*Do Not Apply

102508

Length Code for Composite CC-C

Apply

102511

*Do Not Apply

102510

Length Code for Composite TLC-39

Apply

102513

*Do Not Apply

102512

Length Code for US Postnet

Apply

102517

*Do Not Apply

102516

Length Code for US Planet

Apply

102519

Enter Setup

*Do Not Apply

102518

Length Code for UK Postal

Apply

102521

*Do Not Apply

102520

Length Code for Japan Postal

Apply

102523

*Do Not Apply

102522

Length Code for Australian Postal

Apply

102525

*Do Not Apply

102524

Length Code for Dutch Postal

Apply

102527

*Do Not Apply

102526

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

Apply

102529

Update

***Do Not Apply**

102528

Length Code for UPU FICS Postal

Apply

102531

***Do Not Apply**

102530

Length Code for PDF417

Apply

102533

***Do Not Apply**

102532

Length Code for MicroPDF417

Apply

102535

***Do Not Apply**

102534

Length Code for Data Matrix

Apply

102537

***Do Not Apply**

102536

Length Code for Maxicode

Apply

102539

Enter Setup

***Do Not Apply**

102538

Length Code for QR Code

Apply

102541

***Do Not Apply**

102540

Length Code for MicroQR

Apply

102543

***Do Not Apply**

102542

Length Code for Aztec

Apply

102545

***Do Not Apply**

102544

Update

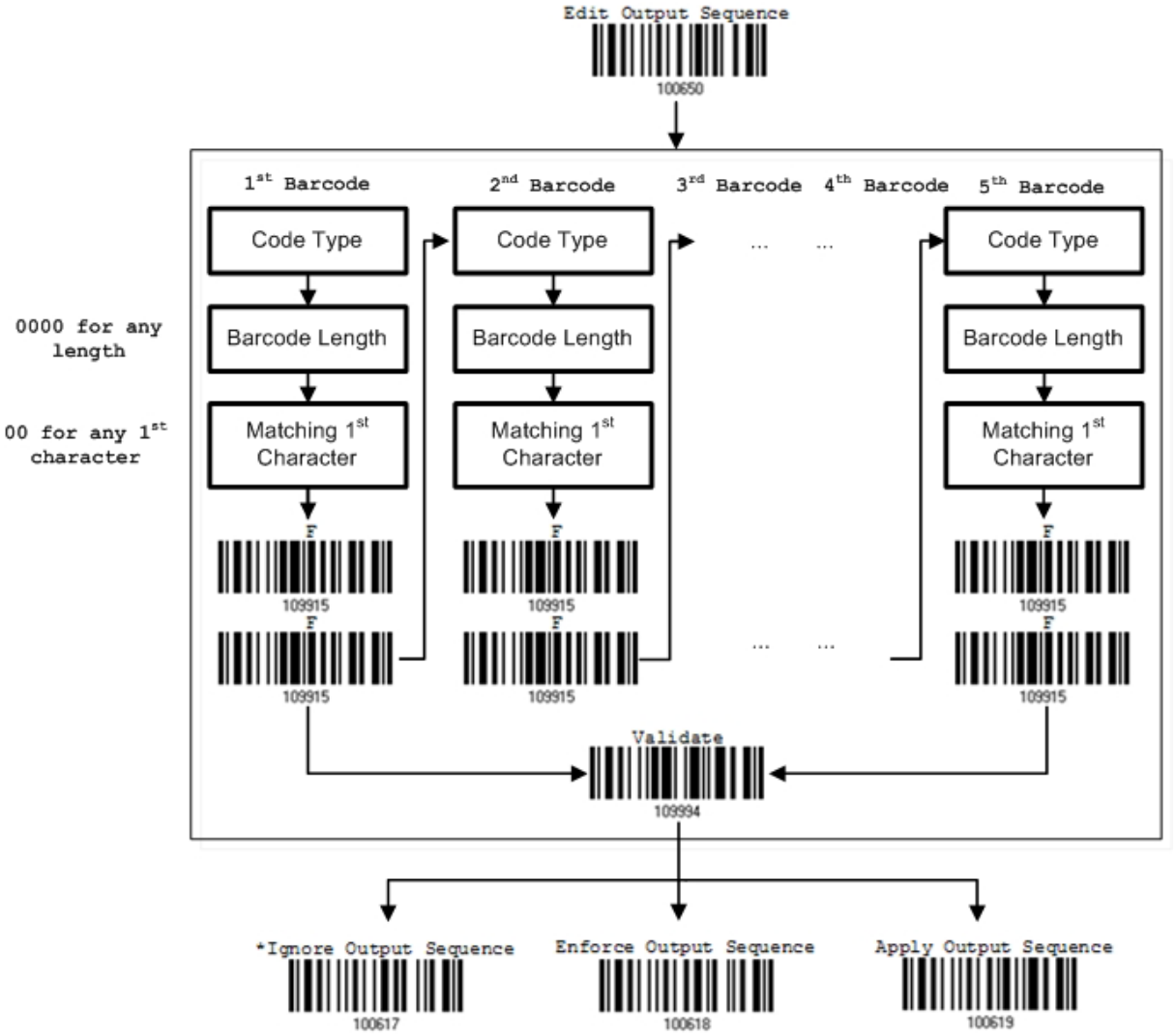
5.6 MULTI-BARCODE EDITOR

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



Enter Setup

5.6.1 EDIT A CONCATENATION OF BARCODES

Edit Output Sequence

100650

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

2) Code Type setting – read the "Hexadecimal Value" barcode on Appendix IV 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 (l)	MicroPDF417
4D (M)	EAN-8	6D (m)	Data Matrix
4E (N)	EAN-8 with Addon 2	6E (n)	Maxicode
4F (O)	EAN-8 with Addon 5	6F (o)	QR Code
50 (P)	EAN-13	70 (p)	US Postnet
51 (Q)	EAN-13 with Addon 2	71 (q)	US Planet
52 (R)	EAN-13 with Addon 5	72 (r)	UK Postal
53 (S)	MSI	73 (s)	Japan Postal
54 (T)	N/A	74 (t)	Australian Postal

Update

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

3) Barcode Length setting – read the "Decimal Value" 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 "Hexadecimal Value" barcode on Appendix IV for the 1st character that must be found matching in the (first) barcode. For example, read "4" and "1" for matching character "A" as the first character in the barcode or read "00" for any character.

5) Read twice the "F" barcode on Appendix IV ("FF") to complete the setting of each barcode.

6) Read the "Validate" barcode on Appendix IV 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).

Enter Setup

***Ignore Output Sequence**

100617

Enforce Output Sequence

100618

Apply Output Sequence

100619

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

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

101470

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

Update

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**

102269

Enable

102270

Enter Setup

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.

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

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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**

End Programming Format

Editing Format 5

Enable

101309

***Disable**

101308

6.1.2 EXCLUSIVE DATA EDITING

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

Yes

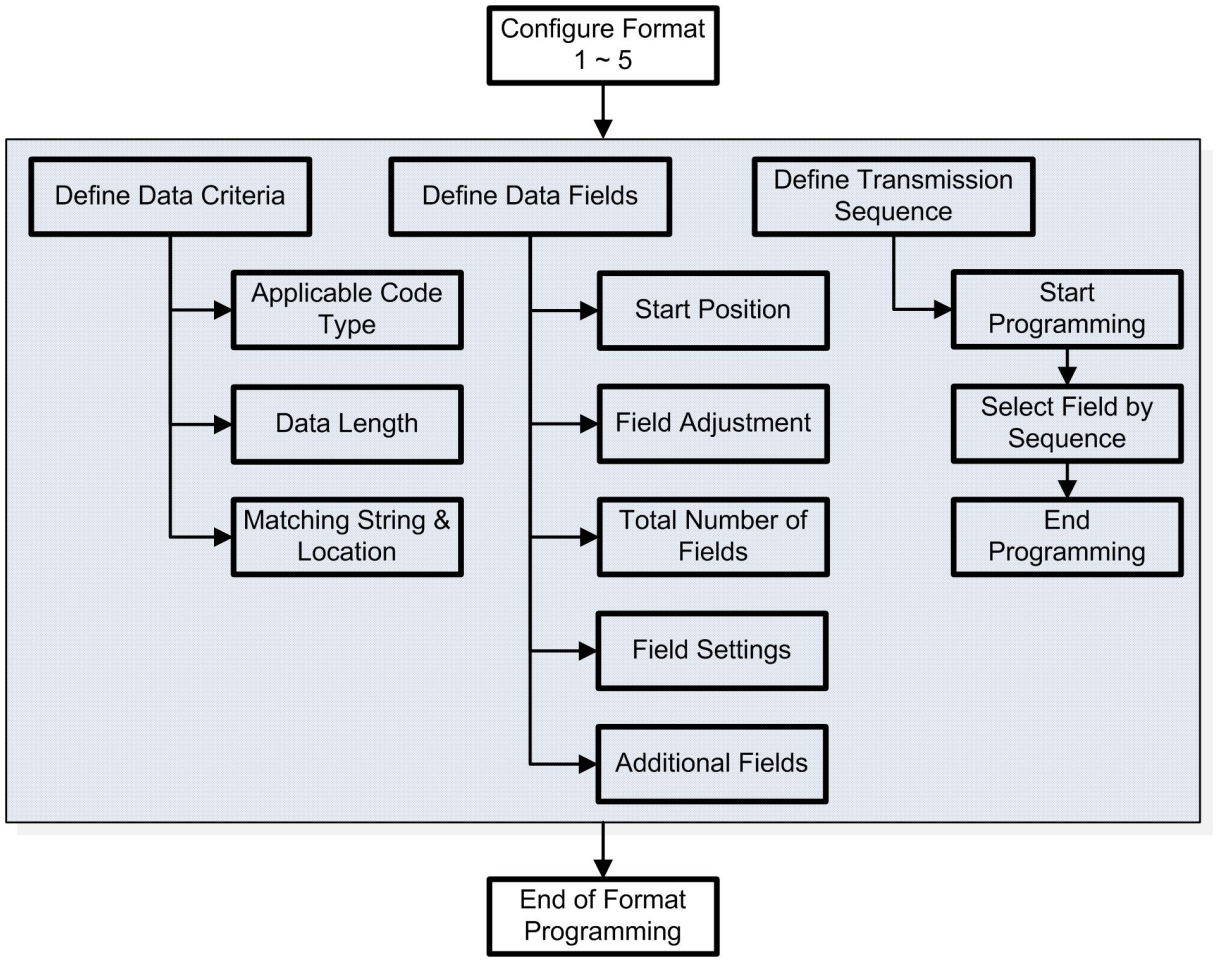
101201

***No**

101200

Update

6.2 HOW TO CONFIGURE EDITING FORMATS



6.2.1 SELECT FORMAT TO CONFIGURE

Start Programming Format

Select one editing format (Format 1~5) and the parameters pertaining to the editing format can then be configured – applicable code type, data length, matching string & location, start position, field adjustment, total number of fields, field settings (field-dividing rule), additional fields, and field transmission sequence.

- Up to five different formats can be specified.

Configure Format 1

109981

End Programming Format

Configure Format 2

Configure Format 3

Configure Format 4

Configure Format 5

Note: Before you complete the programming of an editing format, if you have the scanner read any 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

Update

Additional Fields	None
Field Transmission Sequence	F1

Restore Default Format

109990

6.3 CONFIGURING FORMAT — DEFINE DATA CRITERIA

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

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

6.3.1 APPLICABLE CODE TYPE

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

Note: You must have at least one symbology selected.

***Apply to All**

109992

Clear All

109991

Editing Format for Codabar

***Apply**

101513

Do Not Apply

101512

Editing Format for Code 39

***Apply**

101501

End Programming Format

Do Not Apply

101500

Editing Format for Trioptic Code 39

***Apply**

101625

Do Not Apply

101624

Editing Format for Code 93

***Apply**

101515

Do Not Apply

101514

Editing Format for Code 128

***Apply**

101517

Do Not Apply

101516

Editing Format for GS1-128 & GS1 DataBar

***Apply**

101519

Do Not Apply

101518

Editing Format for ISBT 128

***Apply**

101553

Update

Do Not Apply

101552

Editing Format for EAN-8

***Apply**

101527

Do Not Apply

101526

Editing Format for EAN-8 Addon 2

***Apply**

101529

Do Not Apply

101528

Editing Format for EAN-8 Addon 5

***Apply**

101531

Do Not Apply

101530

Editing Format for EAN-13

***Apply**

101533

Do Not Apply

101532

Editing Format for EAN-13 Addon 2

***Apply**

101535

End Programming Format

Do Not Apply

101534

Editing Format for EAN-13 Addon 5

***Apply**

101537

Do Not Apply

101536

Editing Format for Italian Pharmacode

***Apply**

101503

Do Not Apply

101502

Editing Format for Industrial 25

***Apply**

101507

Do Not Apply

101506

Editing Format for Interleaved 25

***Apply**

101509

Do Not Apply

101508

Editing Format for Matrix 25

***Apply**

101511

Do Not Apply

101510

Editing Format for Chinese 25

***Apply**

101635

Do Not Apply

101634

Editing Format for MSI

***Apply**

101545

Do Not Apply

101544

Editing Format for UPC-A

***Apply**

101539

Do Not Apply

101538

Editing Format for UPC-A Addon 2

***Apply**

101541

Do Not Apply

101540

Editing Format for UPC-A Addon 5

***Apply**

101543

End Programming Format

Do Not Apply

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**

Update

Do Not Apply

101626

Editing Format for Composite CC-A/B

***Apply**

101629

Do Not Apply

101628

Editing Format for Composite CC-C

***Apply**

101631

Do Not Apply

101630

Editing Format for Composite TLC-39

***Apply**

101633

Do Not Apply

101632

Editing Format for US Postnet

***Apply**

101637

Do Not Apply

101636

Editing Format for US Planet

***Apply**

101639

End Programming Format

Do Not Apply

101638

Editing Format for UK Postal

***Apply**

101641

Do Not Apply

101640

Editing Format for Japan Postal

***Apply**

101643

Do Not Apply

101642

Editing Format for Australian Postal

***Apply**

101645

Do Not Apply

101644

Editing Format for Dutch Postal

***Apply**

101647

Do Not Apply

101646

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

***Apply**

101649

Update

Do Not Apply

101648

Editing Format for UPU FICS Postal

***Apply**

101651

Do Not Apply

101650

Editing Format for PDF417

***Apply**

101653

Do Not Apply

101652

Editing Format for MicroPDF417

***Apply**

101655

Do Not Apply

101654

Editing Format for Data Matrix

***Apply**

101657

Do Not Apply

101656

Editing Format for Maxicode

***Apply**

101659

End Programming Format

Do Not Apply

101658

Editing Format for QR Code

***Apply**

101661

Do Not Apply

101660

Editing Format for MicroQR

***Apply**

101663

Do Not Apply

101662

Editing Format for Aztec

***Apply**

101665

Do Not Apply

101664

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.

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

Max. Length

Min. Length

2) Read the "Decimal Value" barcode on Appendix IV for the desired length.

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

1) Read the barcode to specify a matching string.

Matching String…

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.

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

Location of Matching String…

5) Read the "Decimal Value" barcode on Appendix IV for the desired location.

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

End Programming Format

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)

1) Read the barcode above to adjust field by length.
2) Read the "Decimal Value" barcode on Appendix IV for the desired field length.
3) Read the "Validate" barcode on Appendix IV to complete this setting.

6.4.3 TOTAL NUMBER OF FIELDS

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

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

***One Field**

Two Fields

Three Fields

Four Fields

Five Fields

Six Fields

End Programming Format

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 "Validate" barcode on Appendix IV to complete this setting.
4. Read the "Discard Separator" barcode if the field separator is not desired in the field.

***Include Separator**

Discard Separator

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

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

Divide Field 1 by Length

2. Read the "Decimal Value" barcode on Appendix IV for the desired field length.
3. Read the "Validate" barcode on Appendix IV to complete this setting.

Field 2 Setting

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

Select Field Separator to Divide Field 2…

101571

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.
4. Read the "Discard Separator" barcode if the field separator is not desired in the field.

***Include Separator**

101569

Discard Separator

101568

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

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

Divide Field 2 by Length

101570

2. Read the "Decimal Value" barcode on Appendix IV for the desired field length.
3. Read the "Validate" barcode on Appendix IV 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…

101575

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.
4. Read the "Discard Separator" barcode if the field separator is not desired in the field.

***Include Separator**

101573

End Programming Format

Discard Separator

101572

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

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

Divide Field 3 by Length

101574

2. Read the "Decimal Value" barcode on Appendix IV for the desired field length.
3. Read the "Validate" barcode on Appendix IV to complete this setting.

Field 4 Setting

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

Select Field Separator to Divide Field 4…

101579

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.
4. Read the "Discard Separator" barcode if the field separator is not desired in the field.

***Include Separator**

101577

Discard Separator

101576

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

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

Divide Field 4 by Length

101578

2. Read the "Decimal Value" barcode on Appendix IV for the desired field length.
3. Read the "Validate" barcode on Appendix IV to complete this setting.

Update

Field 5 Setting

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

Select Field Separator to Divide Field 5…

101583

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.
4. Read the "Discard Separator" barcode if the field separator is not desired in the field.

***Include Separator**

101581

Discard Separator

101580

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

101582

2. Read the "Decimal Value" barcode on Appendix IV for the desired field length.
3. Read the "Validate" barcode on Appendix IV 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.

Key Type		Key Status
Scan Code	Up to 2 scan code values are allowed.	N/A
Normal Key	Up to 4 character strings are allowed.	▸ 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。.

End Programming Format

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

Additional Field 1…

Additional Field 2…

Additional Field 3…

Additional Field 4…

Additional Field 5…

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

6.4.5 PAUSE FIELD SETTING

Pause Field Time

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

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

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

End Programming Format

6.5 CONFIGURING FORMAT — DEFINE TRANSMISSION SEQUENCE

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

Note: Up to twelve fields can be assigned.

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

Start Programming…

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

Field 1

Field 2

Field 3

Field 4

Field 5

Field 6

Additional Field 1

Additional Field 2

Additional Field 3

Additional Field 4

Additional Field 5

Pause Field

Null Character Field

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

End Programming…

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:

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

6.6.2 EXAMPLE II

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

Data in a barcode is encoded like this:

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

Data will be transmitted like this:

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

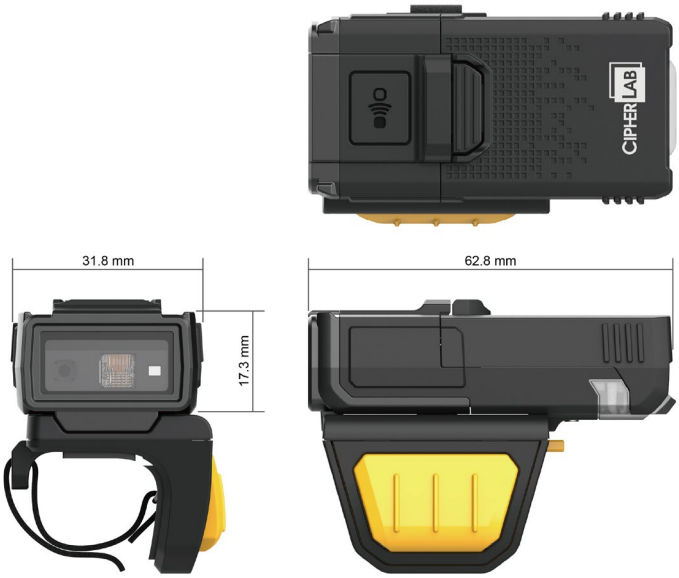
Update

The editing format should be configured as follows:

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

End Programming Format

SPECIFICATIONS



Optical Characteristics	**Ring Scanner**	
Scan Engine	2D Imager	
	▸ SE4770 reader	Aiming Red Laser (655nm) Illumination: 1 x Warm-White LED
	▸ SE5500 reader	Aiming Green Laser (520 nm) Illumination: 2x Warm white LEDs
RF Characteristics		
WPAN Module	Bluetooth Class 2 Bluetooth 5.2	
Coverage (line-of-sight)	Up to 100 meters (Under the circumstance without any obstacles)	
Interface Supported	▸ Serial Port Profile (BT SPP/BLE SPP Lite) ▸ Human Interface Device Profile (BT HID/BLE HOGP) ▸ WR30 Dongle (RS-232、USB HID、USB Virtual COM CDC)	
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
Vibrator		Cylindrical DC Motor
Weight		Approx. 61g (Main core includes SE5500 reader and the battery) and 15g (Ring trigger)
Electrical Characteristics		
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 Temperature		0 °C to 40 °C
Environmental Characteristics		
Temperature	Operating	-20 °C to 50 °C with battery
	Storage	-30 °C to 60 °C (Includes the battery)
Humidity (Non-condensing)	Operating	10% to 90%(Non-condensing)
	Storage	5% to 95%(Non-condensing)
Resistance		
Impact Resistance		1.8 m, 5 drops per 6 sides
Splash / Dust Resistance		IP 65
Electrostatic Discharge		± 20 kV air discharge, ± 10 kV contact discharge
Programming Support		
Configuration		Setup barcodes or host serial commands.
Software		Windows®-based ScanMaster
Firmware upgradeable		Download firmware updates via the download utility.
Accessories (√ means "supported")		
Rechargeable Li-ion Battery		√
Battery Charger		√
Bluetooth Dongle		√
USB Cable		√

Enter Setup

Appendix I

FIRMWARE UPGRADE

In this chapter, the following sections instruct you how to update the firmware of WR30 ring scanner and WR30 Dongle respectively.

For the scanner firmware update, you can only upgrade the 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

There are four ways provided for updating the firmware of WR30 ring scanner:

USING USB-TYPE C CABLE

1) 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

Activate Direct USB VCOM_CDC

100010

Update

109999

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

Update

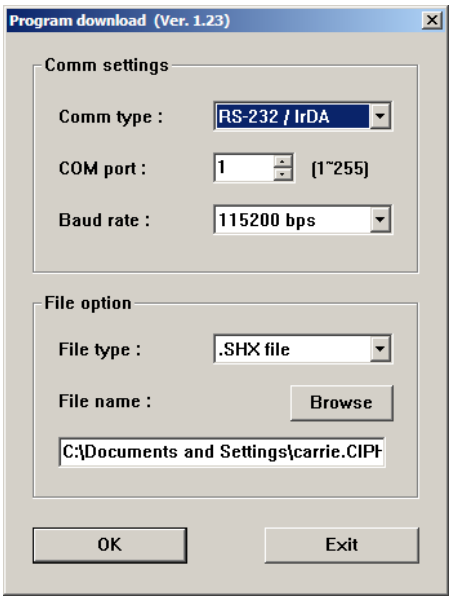
Enter Setup

Download

109997

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

User Program
WR30_S_*.shx



- For the communication settings, select "RS-232/IrDA" and the correct COM port for RS-232 or USB Virtual COM interface.
- For RS-232, select 115200 bps for baud rate; for USB Virtual COM, ignore the baud rate setting.
- For the file option, click [Browse] to select the target file for the firmware update after selecting .SHX file as the file type.
- 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 **Restart Key** during the process of the firmware upgrade. The scanner will automatically restart when the upgrade is completed.

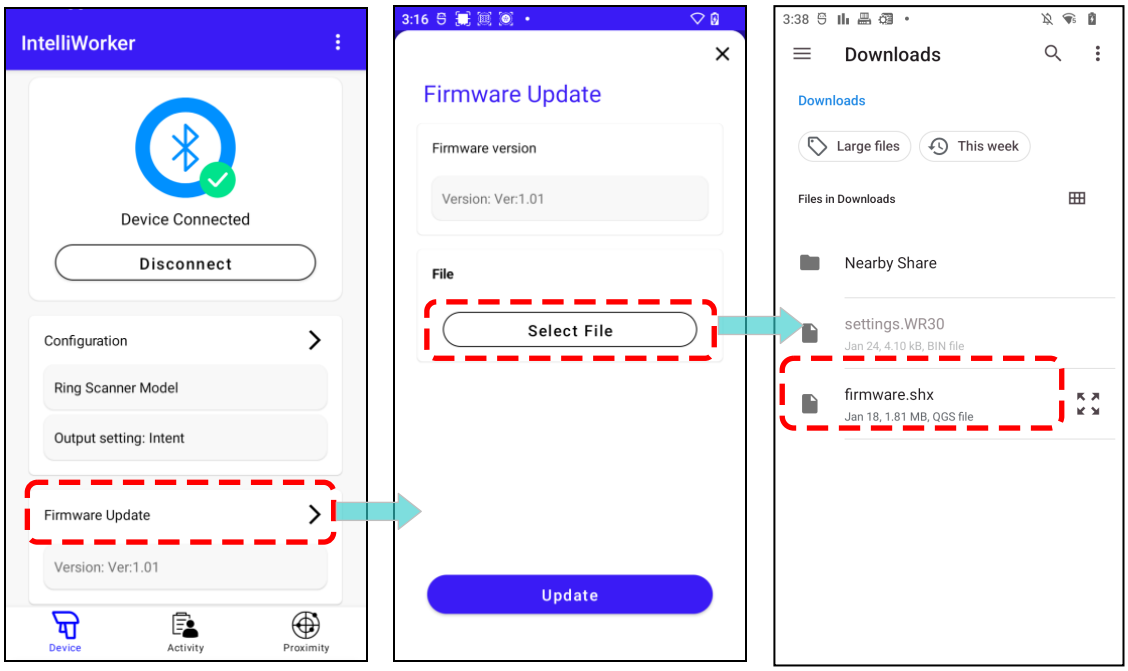
Note 2: For the download of the latest WR30 firmware, please visit CipherLab official website.

Enter Setup

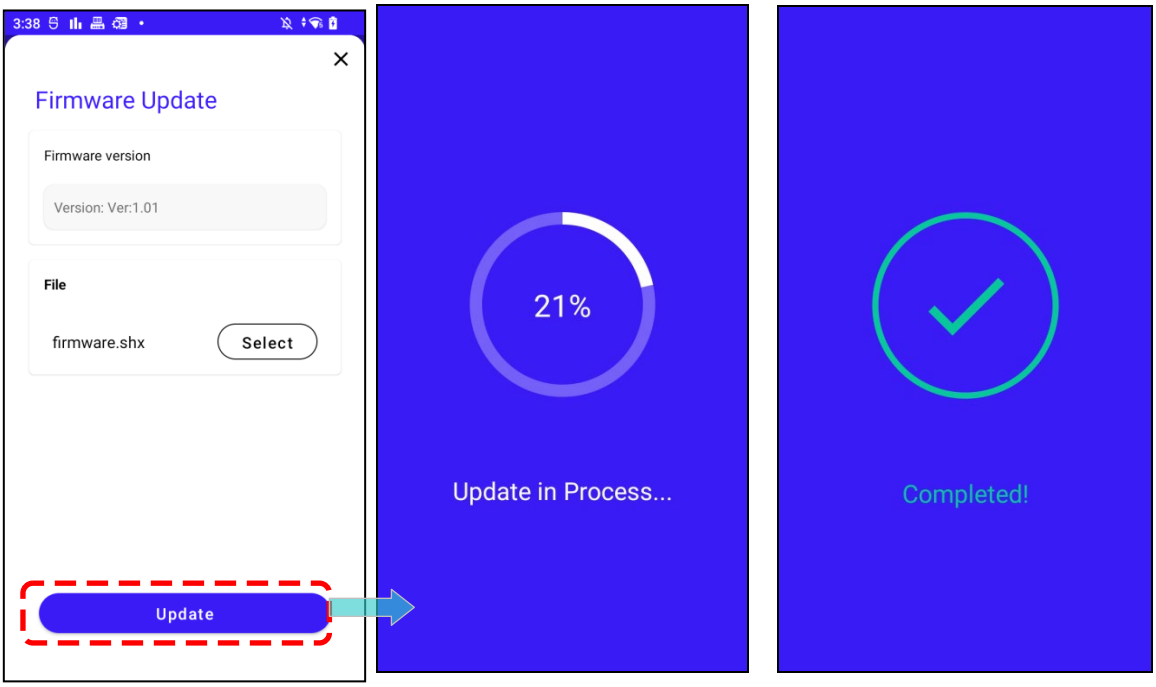
CONNECT TO CIPHERLAB MOBILE COMPUTER VIA BLUETOOTH

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 Chapter 3 – Setting up a WPAN Connection 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.

1) Launch **CipherLab IntelliWorker** App installed on your mobile computer.
2) Rename the new firmware file to be upgraded as firmware.shx.
3) 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.



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


3:38
Firmware Update
Firmware version
Version: Ver:1.01
File
firmware.shx
Select
Update
21%
Update in Process...
Completed!

Enter Setup

USING WR30 DONGLE

1) Connect WR30 Dongle to the USB port of your computer. (Only Windows 10 or above are supported.)

2) Refer to Section 3.5.1 "Connect to WR30 Dongle" for the target scanner to connect to WR30 Dongle.

   Firstly, connect the ring scanner to WR30 Dongle by reading the 2D setup barcode label in the back 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. Once connected, the scanner will respond with three beeps (tone ascending from low to high).

3) Read the following barcodes in sequence to configure the scanner to use USB VCOM_CDC as the download interface.

Enter Setup

Activate Remote USB VCOM_CDC

100031

Update

109999

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

Enter Setup

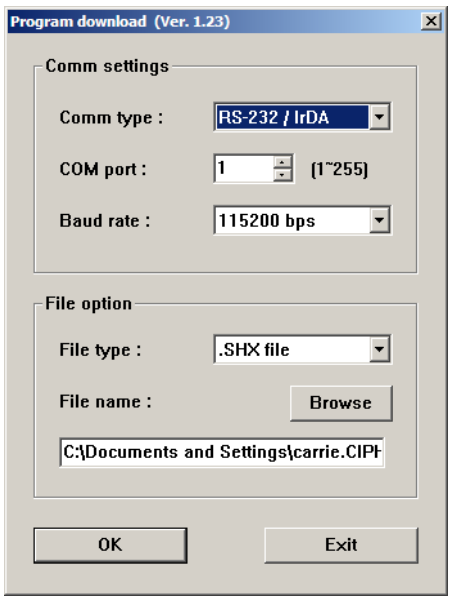
Download

109997

5) Run the download utility "ProgLoad.exe" on the computer.

Kernel Program	User Program
WR30_K_*.shx	WR30_S_*.shx

Update



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

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

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

Note: The output interface remains unchanged as specified in step 3.

Enter Setup

USING BLUETOOTH® DONGLE

1) Refer to Section 3.3.3 "Build a Connection using Bluetooth Dongle" for the target scanner to accept the connection request from your computer.

2) Read the following barcodes in sequence to configure the scanner to use BT SPP as download interface.

Enter Setup

Activate BT SPP

100003

Update

109999

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

Enter Setup

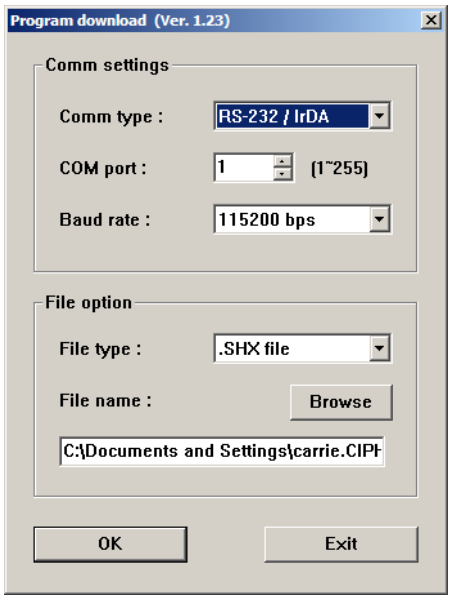
Download

109997

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

Update

Kernel Program	User Program
WR30_K_*.shx	WR30_S_*.shx



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

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

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

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

Enter Setup

HOW TO UPGRADE WR30 DONGLE FIRMWARE

To upgrade the firmware for your WR30 Dongle , the follow the procedures listed below step-by-step:

1) Connect WR30 Dongle to the USB port of your computer. (Only Windows 10 or above are supported.)

2) Refer to Section 3.5.1 "Connect to WR30 Dongle" for the target scanner to connect to WR30 Dongle.

   Firstly, read 2D setup barcode label in the back of WR30 Dongle. The scanner will respond with one beep to indicate that the reading of this barcode is successful, and the scanner will stay active for a specified period of time (2 minutes by default) trying to connect to WR30 Dongle . Once connected, the scanner will respond with three beeps (tone ascending from low to high).

3) Read the following barcodes in sequence to configure the scanner to use USB VCOM_CDC as download interface.

Enter Setup

Activate Remote USB VCOM_CDC

Update

4) Read the following barcodes in sequence for W30 Dongle to enter the download mode — Download CPU Firmware.

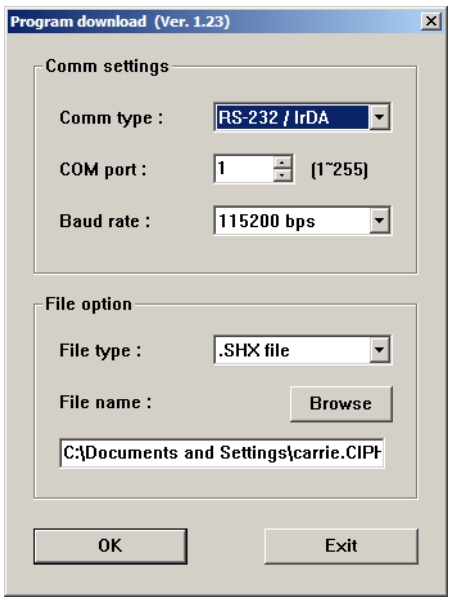
Enter Setup

Download WR30 Dongle CPU Firmware

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

Kernel Program	User Program
WR30Dongle_K_*.shx	WR30Dongle_S_*.shx

Update



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

6) W30 Dongle will automatically restart itself when upgrading firmware is completed successfully.

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

Update

109999

Enter Setup

Appendix II

HOST SERIAL COMMANDS

SERIAL COMMANDS

D

Purpose	To disable the scanner.
Remarks	"D"

E

Purpose	To enable the scanner.
Remarks	"E"

#@ nnnnnn <CR>

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

List Page 3

Serial Command

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

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

#@----<CR>

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

#@....<CR>

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

#@////<CR>

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

Update

#@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.

Enter Setup

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>

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 Ring Scanner.
Remarks	For example,'#@ChargStat?' is to read the charging status of WR30 Ring Scanner : "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>

- For the scanner to vibrate for nine times –

  #@VIBR,09<CR>

  For the reading of the scanner charging status–

  #@ChargStat?<CR>

Enter Setup

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.

1) Connect WR30 Dongle to your computer. (WR30 Dongle only supports Windows 10 operating system or above.)
2) Refer to Section 3.5.1 Connect to WR30 Dongle for the target scanner to connect to WR30 Dongle.
3) 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)

Update

109999

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 USB DONGLE SERIAL COMMAND AND EQUIVALENT SETUP BARCODES

Config<CR>

Purpose To configure WR30 Dongle.

Here is the setup barcode for this serial command:

Config

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:

DefaultSetting

Version<CR>

Purpose To get the current firmware version of WR30 Dongle.

Here is the setup barcode for this serial command:

Version

GetID<cR>

Purpose To get MAC ID of WR30 Dongle.

Here is the setup barcode for this serial command:

GetID

Download<CR>

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

Here is the setup barcode for this serial command:

Download

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.

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

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

Update

BYPASS SPECIAL KEYBOARD

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

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

Enter Setup

KEY TYPE & STATUS

KEY TYPE

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

***Normal**

109926

Scan Code

109936

KEY STATUS

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

Add Shift

109930

Add Left Ctrl

109931

Add Right Ctrl

109933

Add Left Alt

109932

Add Right Alt

109934

Update

EXAMPLE

Key Type = Normal

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

1. Read the "Configure Prefix" barcode.
2. Read the "Hexadecimal Value" barcode on Appendix IV 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:

1. Read the "Configure Prefix" barcode.
2. Read the "Scan Code" barcode.
3. Read the "Hexadecimal Value" barcode on Appendix IV 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".
4. Read the "Validate" barcode on Appendix IV to complete this setting.

Key Type = Normal + Key Status = Ctrl

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

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

Enter Setup

Appendix IV

NUMERAL SYSTEMS

DECIMAL SYSTEM

Decimal

0

109900

1

109901

2

109902

3

109903

4

109904

5

109905

6

109906

7

109907

8

109908

9

109909

Validate the Values

109994

Validate

Update

Abort

HEXADECIMAL SYSTEM

Hexadecimal

Validate the Values

Validate

Enter Setup

ASCII TABLE

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

Update

Abort

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.

LICENSE PARSING SETUP

***License Parse Disable**

License Parse Enable

Parse Field Clear

FILE TYPE

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

***Enable**

Disable

Update

Abort

OUTPUT SEQUENCE SETUP

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

Full Name

Last Name

First Name

Middle Name/Initial

Name Suffix

Name Prefix

Mailing Address Line1

Mailing Address Line2

Mailing Address City

Mailing Address State

Update

Abort

Mailing Address Postal Code

Home Address Line1

Home Address Line2

Home Address City

Home Address State

Home Address Postal Code

License ID Number

License Class

License Restrictions

License Endorsements

Height (Feet and/or Inches)

Height (Centimeters)

Enter Setup

Weight (Pounds)

Weight (Kilograms)

Eye Color

Hair Color

License Expiration Date

Birth Date

Gender

License Issue Date

Issue Timestamp

Number of Duplicates

Medical Codes

Organ Donor

Update

Abort

Nonresident

Customer ID

Social Security Number

AKA Birth Date

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

Enter Setup

Document Discriminator

103057

Country

103058

Federal Commission Codes

103059

Place of Birth

103060

Audit Information

103061

Inventory Control

103062

Race/Ethnicity

103063

Std Vehicle Class

103064

Std Restrictions

103065

Std Endorsements

103066

Class Description

103067

Endorsement Description

103068

Update

Abort

Restrictions Description

103069

Permit Class

103070

Permit Expiration Date

103071

Permit ID Number

103072

Permit Issue Date

103073

Permit Restrictions

103074

Permit endorsements

103075

Issuer ID Number

103076

Family Name Truncation

103077

First Name Truncation

103078

Middle Name Truncation

103079

Enter Setup

SEPARATORS AND FIELDS

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

Note: Up to 5 separators can be assigned.

Separator 1
(1 byte)
***"Space"**

Separator 2
(1 byte)
***"Enter"**

Separator 3
(1 byte)
***",**

Separator 4
(1 byte)
***".**

Separator 5
(1 byte)
***"-**

Additional Field 1
(4 bytes)

Additional Field 2
(4 bytes)

Additional Field 3
(4 bytes)

Additional Field 4
(4 bytes)

Additional Field 5
(4 bytes)

Update

Abort

EDIT SEPARATORS

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

Edit Separator 1

Edit Separator 2

Edit Separator 3

Edit Separator 4

Edit Separator 5

1) Read the barcode above to apply separator to driver license information separately, and follow steps 2~3.
2) Read the "Hexadecimal Value" barcode on Appendix IV 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.

Enter Setup

EDIT FIELDS

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

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

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

Edit Additional Field 1

Edit Additional Field 2

Edit Additional Field 3

Edit Additional Field 4

Edit Additional Field 5

1) 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.

Update

Abort

Appendix VI

KEYBOARD TYPE ONE-SCAN BARCODE

BLUETOOTH HID

PCAT (US)

PCAT (French)

PCAT (German)

PCAT (Italian)

PCAT (Swedish)

PCAT (Norwegian)

PCAT (UK)

PCAT (Belgium)

PCAT (Spanish)

PCAT (Portuguese)

PS55 A01-2 (Japanese)

User-defined table

PCAT (Turkish)

PCAT (Hungarian)

PCAT (Swiss German)

PCAT (Danish)

PCAT (Greek)

PCAT (Russian)

PCAT (Cyrillic on Russian)

PCAT (Armenian)

PCAT (Thai)

PCAT (Slovenian)

PCAT (Mexican Spanish)

PCAT (Swiss French)

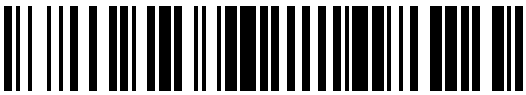
PCAT (Czech)

BLE HOGP HID

PCAT (US)

#@LH0001#

PCAT (French)



#@LH0002#

PCAT (German)

#@LH0003#

PCAT (Italian)

#@LH0004#

PCAT (Swedish)

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PCAT (Norwegian)

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PCAT (UK)

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User-defined table

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PCAT (Swiss German)

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PCAT (Danish)

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PCAT (Greek)

#@LH0035#

PCAT (Russian)

#@LH0037#

PCAT (Cyrillic on Russian)

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PCAT (Armenian)

#@LH0043#

PCAT (Thai)

#@LH0044#

PCAT (Slovenian)

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PCAT (Mexican Spanish)

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PCAT (UK)

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PCAT (Spanish)

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PCAT (Portuguese)

PS55 A01-2 (Japanese)

User-defined table

PCAT (Turkish)

PCAT (Hungarian)

PCAT (Switzerland German)

PCAT (Danish)

PCAT (Greek)

PCAT (Russian)

PCAT (Cyrillic on Russian)

PCAT (Armenian)

PCAT (Thai)

PCAT (Slovenian)

PCAT (Mexican Spanish)

PCAT (Swiss French)

PCAT (Czech)

REMOTE USB HID (WR30 DONGLE)

PCAT (US)

PCAT (French)

PCAT (German)

PCAT (Italian)

PCAT (Swedish)

PCAT (Norwegian)

PCAT (UK)

PCAT (Belgium)

PCAT (Spanish)

PCAT (Portuguese)

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PS55 A01-2 (Japanese)

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User-defined table

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PCAT (Greek)

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PCAT (Russian)

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PCAT (Cyrillic on Russian)

PCAT (Armenian)

PCAT (Thai)

PCAT (Slovenian)

PCAT (Mexican Spanish)

PCAT (Swiss French)

PCAT (Czech)