HARDWARE MANUAL

VERSION 1.0

S-22

METAPACE

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Website: http://www.metapace.com

IMPORTANT NOTICES

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, 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 cradle 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.

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INTRODUCTION

The Metapace S-22 scanner, which is specifically designed to answer your mobile demands, helps 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. Integrated with short-distance wireless technology, the small-form-factor scanner is ideal for carrying around, and thus gives workers tether-free mobility anytime anywhere that gets job done more efficiently. The scanner delivers data over a wireless personal network at a range of up to 90 meters and keeps business running with a prolonged battery life. A new ordering option is provided for adapting a 2D scan engine to read both 1D and 2D barcodes.

Owing to the slim, ergonomic design, extremely low power consumption, and powerful decoding capability, the scanner is the best choice for the following applications –

- Receiving in Retail
- Product labeling & Tracking
- Shelf 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 our products!

Update

GETTING FAMILIARIZED WITH METAPACE S-22 AND THE CRADLE

INSTALLING THE BATTERY TO METAPACE S-22

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

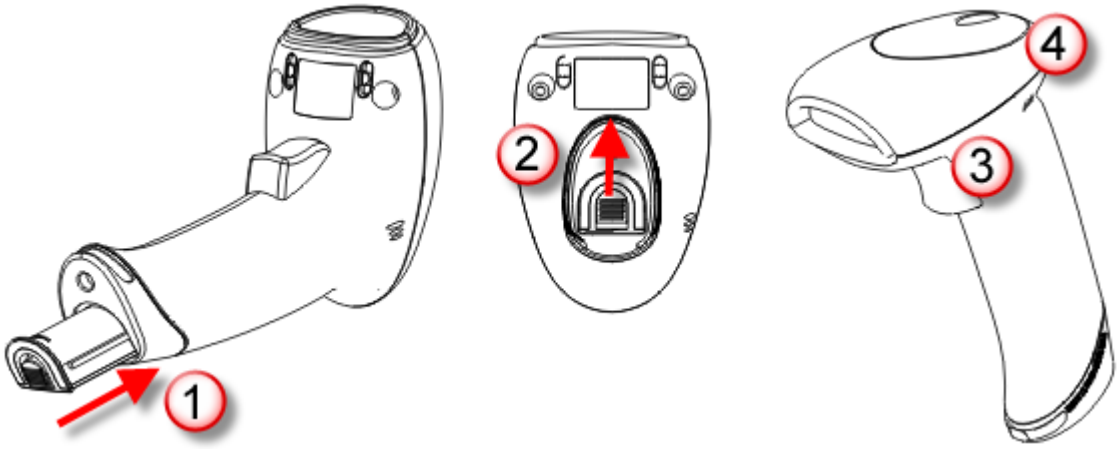
Note: Any improper handling may reduce the battery life.

I) Hold the scanner still and insert the battery into the battery compartment at the bottom of the scanner.

2) Slide the battery latch to lock the battery in the compartment.

3) Hold down the trigger about 2 seconds to turn on the scanner.

4) The scanner will respond with a long beep and its LED will come on-off shortly.

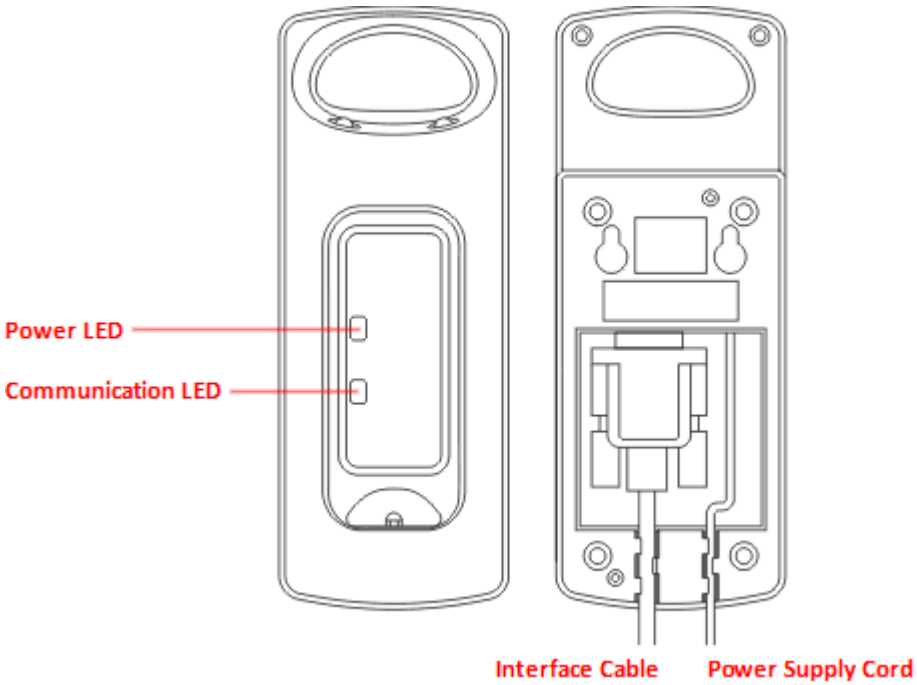


Note: (1) To turn off the scanner, remove the battery. Refer to settings of "1.1.1 Turn on/off the Scanner".
(2) For shipping and storage purposes, save the scanner and the battery separately. This will keep the battery in good condition for future use.
(3) When the battery capacity becomes low, you will find the scanner cannot emit scan beam and its power-on beep sounds differently.

Enter Setup

SETTING UP THE CRADLE

Capable of charging Metapace S-22, the cradle is specifically designed for the scanner to communicate with a host computer wirelessly. The connection between the scanner and the cradle is made easy and reliable. Refer to 3.1.1 Connect to the Cradle. The cradle is also an Auto-Sense stand when used with the scanner set to Auto-Sense mode.



The table below describes the status of the power and communication LED indicators of the cradle.

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

---	Blue, flashing	Wait for connection request from the scanner (Slow flash at 0.5 Hz)
---	Blue, solid	Connected with the scanner
Red, solid	Blue, flashing	Failed to send data to host via USB Virtual COM (Fast flash at 1 Hz)
Red, flashing	---	Enter Download Mode

Enter Setup

CHARGING THE BATTERY VIA THE CRADLE

The battery may not be charged to full for shipment. When you first receive the package, you will need to charge the battery to full before using the scanner. Please follow the steps below.

Note: It takes approximately 5 hours to charge the battery to full (from the power adaptor). Battery charging stops when the temperature drops below 0°C or exceeds 40°C. It is recommended charging the battery at room temperature (18°C to 25°C) for optimal performance.

1) Install the battery to the scanner.
2) Seat the scanner in the cradle.
3) Connect the cradle to your computer or notebook via the USB or RS-232 cable.
4) Connect the power cord of the cradle to a proper power outlet.
5) The power LED indicator on the cradle turns solid red after the USB cable or the power cord is connected.

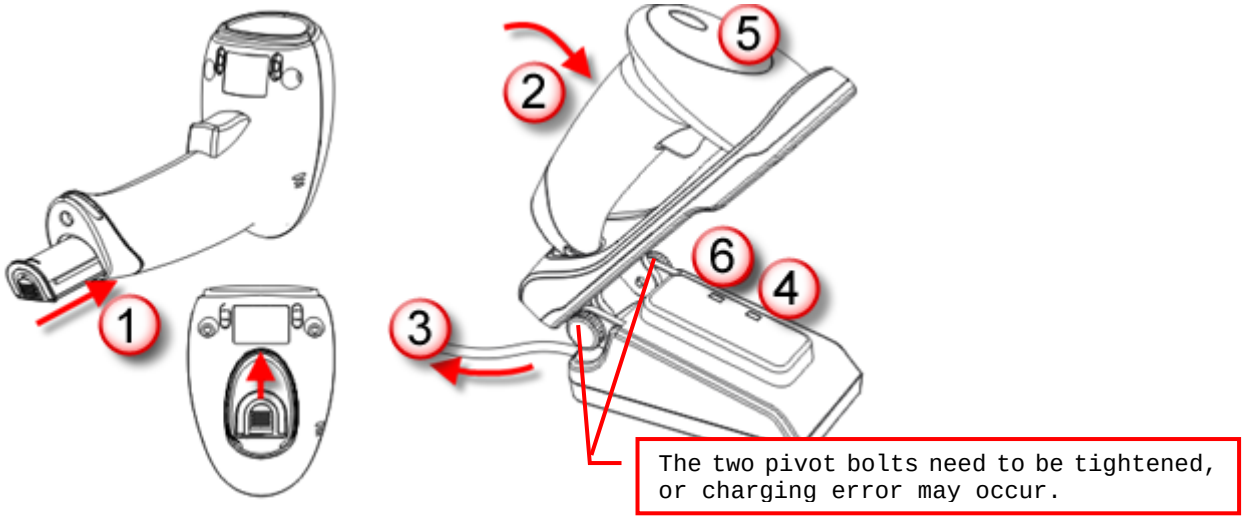
Warning: RS-232/USB interface both require connecting the power supply cord. When the cradle is solely on USB power, the current may be insufficient for it to function normally. Therefore, we suggest connecting the power supply cord.

6) The scanner LED indicator will be flashing red during charging.

   When the charging is done, the scanner LED indicator turns off.

   If a charging error occurs, the scanner LED indicator turns solid red.

7) The LED for communications on the cradle will first become solid blue while initializing. Refer to the table above for details on different stage of communications.



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

INSIDE THE PACKAGE

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

- Metapace S-22 Scanner
- USB Cable
- Power Supply
- Charging & Communication Cradle
- Rechargeable Li-ion battery
- Product CD
- Quick Start Guide

Note: The CD-ROM includes this manual and Windows-based software *Metapace.exe* for configuration.

PRODUCT HIGHLIGHTS

- Small-form-factor and built tough to survive drop test
- Extremely low power consumption
- Firmware upgradeable
- Supports most popular barcode symbologies, including GS1-128 (EAN-128), GS1 DataBar (RSS), etc.
- Supports negative barcodes
- Supports different scan modes, including Aiming Mode and Multi-Barcode Mode
- LED indicator and beeper response for status verification
- Beeping tone and duration configurable for Good Read
- 4 MB flash memory for Memory Mode operation, storing up to 246,723 scans based on EAN-13 barcodes
- Provides up to 10 KB SRAM for reserve buffer while getting out of range over a wireless personal area network (WPAN), storing up to 640 scans based on EAN-13 barcodes
- Capable of transmitting scanned data, emulating a serial cable (BT SPP) or as keyboard input (BT HID), to a notebook computer or PDA with *Bluetooth*® wireless technology
- Programmable parameters include data output format, editing format, symbologies, etc.
- Easy configuration through the Metapace utility

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

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		Disable
Code 3 of 9	Code 39	Enabled	
	Italian Pharmacode		Disabled
	French Pharmacode		Disabled
EAN / UPC	EAN-8	Enabled	
	EAN-8 Addon 2		Disabled
	EAN-8 Addon 5		Disabled
	EAN-13	Enabled	
	EAN-13 & UPC-A Addon 2		Disabled
	EAN-13 & UPC-A Addon 5		Disabled
	ISBN		Disabled
	UPC-E0	Enabled	
	UPC-E1		Disabled
	UPC-E Addon 2		Disabled
	UPC-E Addon 5		Disabled
	UPC-A	Enabled	
GS1 DataBar (RSS)	GS1 DataBar Omnidirectional (RSS-14)		Disabled
	GS1 DataBar Truncated		Disabled
	GS1 DataBar Stacked		Disabled
	GS1 DataBar Stacked Omnidirectional		Disabled

Update

	GS1 DataBar Limited (RSS Limited)		Disabled
	GS1 DataBar Expanded (RSS Expanded)		Disabled
	GS1 DataBar Expanded Stacked		Disabled
Code 11			Disabled
Composite Code	Composite CC-A/B		Disabled
	Composite CC-C		Disabled
	Composite TLC-39		Disabled
Postal Code	US Postnet	Enabled	
	US Planet	Enabled	
	UK Postal	Enabled	
	Japan Postal	Enabled	
	Australian Postal	Enabled	
	Dutch Postal	Enabled	
	USPS 4CB/One Code/Intelligent Mail		Disabled
	UPU FICS Postal		Disabled
2D 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 software *Metapace.exe*.

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

Configuration Mode

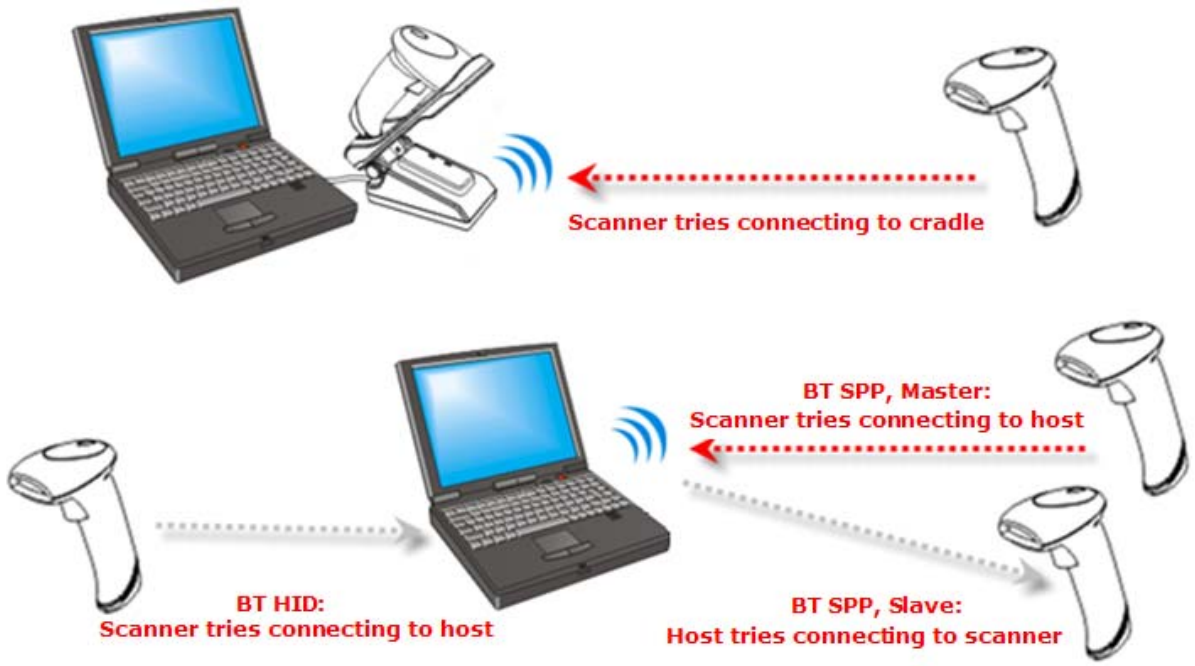
1. Hold down the trigger about 2 seconds to turn on the scanner. It will respond with a long beep and its LED will come on-off shortly.
2. Have the scanner read the “Enter Setup” barcode. It will respond with six beeps and its LED indicator will become flashing red after reading the barcode.
3. Have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

Note: Refer to Appendix I Host Serial Commands for how to configure the cradle by having the scanner read cradle-related setup barcodes or using serial commands.

Update

Working Mode

Upon powering up, the scanner will try to establish a connection with the cradle or a computer with *Bluetooth*® wireless technology. Refer to Chapter 3 – Setting up a WPAN Connection for details. The connection between the scanner and the cradle is made easy and reliable.



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

Enter Setup

ENTERING 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 the “Read a Setup Barcode” section below.

EXITING 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

Update

DEFAULT SETTINGS

SAVE USER SETTINGS AS DEFAULTS

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

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

Save as User Defaults

RESTORE USER DEFAULTS

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

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

Restore User Defaults

RESTORE SYSTEM DEFAULTS

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

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

Restore System Defaults

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

Enter Setup

READING A SETUP BARCODE

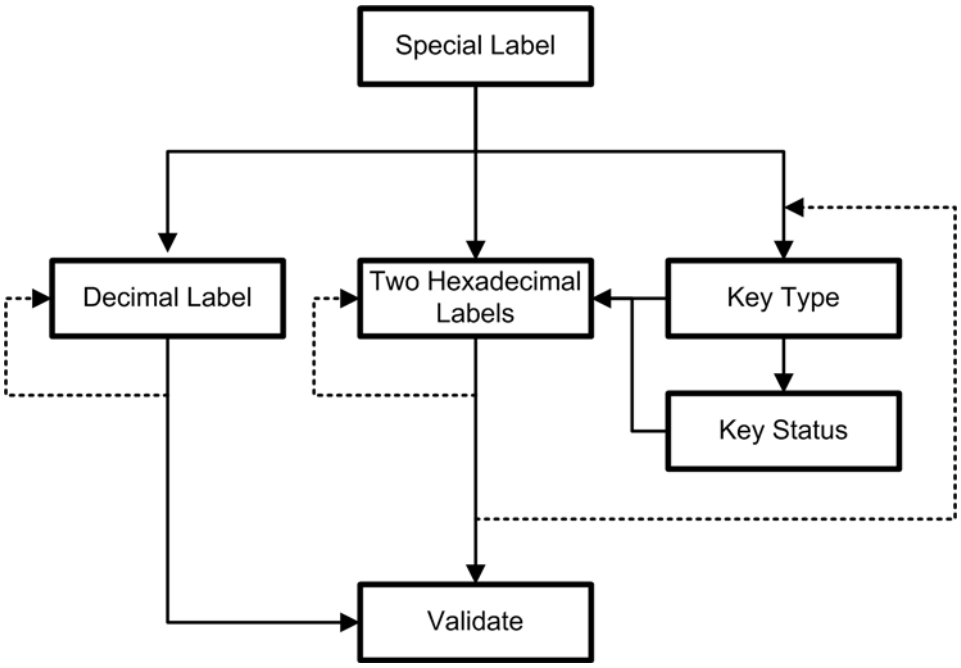
CONFIGURE PARAMETERS

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

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

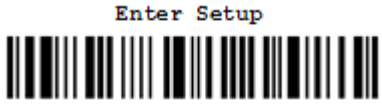
- Numeric barcodes, say, for keyboard type, inter-character delay, length qualification
- Hexadecimal barcodes, say, for character strings as prefix, suffix, etc.
- When “BT HID”, “USB HID” or “Keyboard Wedge” is configured for interface, Key Type and Key Status will then become applicable. You may decide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

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



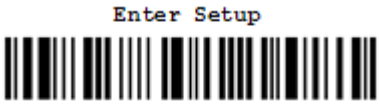
Update

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	LED/Beeper Response when 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.
4	Exit the Configuration Mode…	Same as for *Enter the Configuration Mode*.
5	The scanner will automatically restart itself…	Same as for *Power on the scanner*.
*	If 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	LED/Beeper Response when Successful
1	Power on the scanner...	The scanner will respond with a long beep (high tone) and its LED indicator will become solid red and go off quickly.
2	Enter the Configuration Mode... 	The scanner will respond with six beeps (high-low tone repeats three times), and its LED indicator will become flashing red.
3	Read a Setup barcode... For example, **Normal setup barcode** **Normal setup barcode** **Special setup barcode** **Decimal barcodes**	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...	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	LED/Beeper Response when 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", "USB HID" or "Keyboard Wedge" is configured for interface, Key Type and Key Status will then become applicable. You may decide whether or not to change key status when "Normal Key" is selected for Key Type. ▸ Refer to Appendix III
	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 list shown below includes pages. You can select the page of interest by having the scanner read a particular “List Page x” barcode. And then the scanner will respond with two beeps (low-high tone) and send the scanned 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
Reserved	**List Page 10**	109959

Update

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

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

109948

Enter Setup

CREATING ONE-SCAN SETUP BARCODES

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

The requirements of a One-Scan setup barcode are:

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

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

Enter Setup

List Page 3

Update

Now, it requires only one read:

One-Scan Setup Barcode for 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

Enter Setup

Chapter 1

UNDERSTANDING THE BARCODE SCANNER

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

IN THIS CHAPTER

1.1 Battery 21
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1.14 Mobile Phone/Display Mode 48

1.1 BATTERY

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

Note: The scanner supports power economy. Please refer to “1.1.2 Power Economy”, “Sniff Mode”, as well as “1.4.3 Low Battery Alarm”.

1.1.1 TURN ON/OFF THE SCANNER

Turn on the scanner...

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

Turn off the scanner...

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

1.1.2 POWER ECONOMY

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

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

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

1.1.2.1 POWER-SAVING

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

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

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

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

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

101021

1) Read the barcode above to enable the scanner to enter low-speed “Power-Saving”.
2) Assign the time for the scanner to enter low-speed mode by reading the “Decimal Value” barcode on page 237. For example, read “5” for the scanner to enter low-speed mode after idleness of 5 minutes.
3) Read the “Validate” barcode on the same page to complete this setting.

Note: Power-Saving won’t take effect when one of the following conditions is met:
(1) the scanner has already established a BT HID/SPP connection,
(2) the scanner is in the configuration mode,
(3) the scan mode is set to Test Mode,
(4) the setting value of Power-Saving is greater than that of Auto Power Off.

Enter Setup

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 1.1.2.3 Auto Power Off Ignoring Scan Mode to achieve auto power off.

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

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

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

2) Assign the auto power off time by reading the “Decimal Value” barcode on page 237. For example, read “1” and “5” for the scanner to automatically turn off after idleness of 15 minutes.

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

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

1.1.2.3 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 to finish the following settings:

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

Update

Enable

***Disable**

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

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

Enter Setup

1.1.3 POWER ECONOMY VS. WPAN CONNECTION

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

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

Before establishing a WPAN connection successfully...

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

   (a) waiting for a connection request from the host (BT SPP Slave Mode)

   (b) trying to connect to the host (BT HID or BT SPP Master Mode)

   (c) trying to connect to the cradle

2. If the scanner fails to connect within 2 minutes, it becomes inactive to save power for the remaining period of time (the specified "Auto Power Off" value minus 2 minutes). The CPU starts to run at low speed, and the LED begins to blink red (On/Off ratio 0.3 s: 2.5 s).

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

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

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

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

After establishing a WPAN connection successfully...

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

2. If the scanner stays idle for 2 minutes (default), it will then turn inactive to save power for the remaining period of time (the specified "Auto Power Off" value minus 2 minutes). The CPU runs at low speed, and the LED is blinking red (On/Off ratio 0.3 s: 2.5 s).

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

   - For BT HID or SPP, the scanner automatically shuts down after the configured "Auto Power Off" time without the transition from full CPU speed to low CPU speed. However, when connecting with the cradle, the scanner will go through the transition in order to save power.

3. If the scanner first becomes idle and finally stays inactive until the specified Auto Power Off time is up, the scanner will automatically turn off in order to conserve battery power. You will hear three short beeps, tone descending from high to low.

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

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

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

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

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

When transmit buffer is enabled...

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

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

When transmit buffer is disabled...

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

***Enable**

Disable

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

Update

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 the host is disabled.

Enable

***Disable**

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**

250 ms

500 ms

1 sec

2 sec

3 sec

5 sec

Enter Setup

8 sec

100245

Send Data

The 4 MB flash memory on the scanner can store up to 246,723 scans based on EAN-13 barcodes. When it is used up, the scanner will respond with two short beeps (high-low tone) as a warning.

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

Send Data

109918

Clear Data & Confirm

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

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

Clear Data

109916

Confirm

109917

1.2.3 FREE MEMORY

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

Spare Memory

109931

Update

1.3 LED INDICATOR

The triple-color LED on top of the scanner is used to provide feedback for users. 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 (On/Off ratio 0.5 s: 0.5 s) ▸ Configuration Mode (On/Off ratio 0.5 s: 0.5 s)
Red, solid	---	---	Charging error
Red, flashing	---	---	Flashing red (On/Off ratio 0.3 s: 2.5 s) indicates the scanner is inactive and its CPU running at low speed to save power — ▸ No WPAN connection is established after waiting for two minutes
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) and beeper pitch and duration programmable
---	Blue, flashing	---	First, flashing blue (On/Off ratio 0.5 s: 0.5 s) for two minutes indicates the scanner is waiting for connection, and goes off if no connection is established, then flashing red (On/Off ratio 0.3 s: 2.5 s) indicates the scanner is inactive. It is ready for connection only while the LED is flashing blue — ▸ SPP Slave: waiting host to connect ▸ HID or SPP Master: trying to connect to host ▸ Using the cradle: trying to connect to the cradle
---	Blue, flashing	---	Flashing blue (On/Off ratio 0.1 s: 0.1 s) indicates the scanner receives a PIN code request from host (flashing more quickly than waiting connection).
---	Blue, flashing	---	Flashing blue (On/Off ratio 0.02 s: 3 s) indicates the scanner has established a WPAN connection successfully.
---	Blue, flashing	Green, flashing	Flashing blue and green (On/Off ratio 0.1 s: 0.1 s) indicates an error occurs while entering the PIN code. Press the trigger to get ready for re-connecting.

Enter Setup

1.3.1 GOOD READ LED

***Enable Good Read LED**

Disable Good Read LED

1.3.2 GOOD READ LED DURATION

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

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

1) Read the barcode above to specify the time interval before the Good Read LED goes off.
2) Read the "Decimal Value" barcode on page 237. For example, read "1" and "5" for the Good Read LED to go off after 150 milliseconds.
3) Read the "Validate" barcode on the same page to complete this setting.

Update

1.4 BEEPER

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

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

Enter Setup

1.4.1 BEEPER VOLUME

Mute

Minimum Volume

Medium Volume

***Maximum Volume**

Update

1.4.2 GOOD READ BEEP

Frequency

8 kHz

***4 kHz**

2 kHz

1 kHz

Duration

***Shortest**

Shorter

Longer

Longest

Enter Setup

1.4.3 LOW BATTERY ALARM

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

No Alarm

***Low Battery Alarm**

Update

1.5 SEND “NR” TO HOST

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

Enable

***Disable**

Enter Setup

1.6 SCAN MODES

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

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

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

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

Update

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 "Scanning Timeout".

***Laser Mode**

100206

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, or (2) the pre-set timeout expires.

Note: Refer to "Scanning Timeout".

Auto Off Mode

100200

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 "Delay between Re-read" and "Scanning Timeout".

Auto Power Off Mode

100202

Enter Setup

1.6.5 AIMING MODE

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

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

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 page 237. For example, read "1" and "0" for the scanner to automatically shut down after idleness for 10 seconds.
3. Read the "Validate" barcode on the same page to complete this setting.

1.6.8 MULTI-BARCODE MODE

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

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

Multi-Barcode Mode

100209

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

Update

1.6.7 PRESENTATION MODE

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

Aiming Mode

Low Light Enhancement

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

Enable

***Disable**

Enter Setup

1.7 SCANNING TIMEOUT

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

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

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

1) Read the barcode above to specify the time interval before the scan engine times out.
2) Read the "Decimal Value" barcode on page 237. For example, read "1" and "5" for the scanner to automatically shut down after idleness of 15 seconds.
3) Read the "Validate" barcode on the same page to complete this setting.

Update

1.8 DELAY BETWEEN RE-READ

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

- Auto Power Off mode
- Presentation mode

100 ms

200 ms

***400 ms**

800 ms

1 sec

2 sec

3 sec

5 sec

Enter Setup

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**

One Time

Two Times

Update

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 (2~30 times) allows changing the number of times to decode a UPC/EAN barcode before transmission. The more redundancy you select, the higher the reading security is, and thus, the slower the reading speed becomes. You will have to compromise between reading security and decoding speed.

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

Addon Security Level (*2~30)

1) Read the barcode above to specify the read redundancy for UPC/EAN barcodes. (It is set to 0 by default.)
2) Read the "Decimal Value" barcode on page 237. For example, read "1" and "2" for the scanner to re-read the barcode for 12 times.
3) Read the "Validate" barcode on the same page to complete this setting.

Enter Setup

1.11 AUTO-SENSE MODE

Users can just seat the scanner in the cradle to have it enter Auto-Sense mode. With Auto-Sense mode enabled, it will force the scanner to apply Laser mode as the scan mode; however, it works slightly differently from the original Laser mode. As the figure illustrated below, now the scanner will be expecting barcodes as long as it is seated in the cradle. Whenever a barcode is brought within the scanning range, the scanner will be able to decode it.

Note: Remove the scanner from the cradle to exit Auto-Sense mode. It will return to Laser mode. If Laser mode is not desired, proceed to select a scan mode best suits your application.

Note: For Auto-Sense mode to work, you must connect both the power supply cord (1) and the interface cable (2) to the cradle. A single interface cable drawing power from the USB port is insufficient.

Update

1.12 NEGATIVE BARCODES

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

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

Enable

***Disable**

Enter Setup

1.13 PICKLIST MODE

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

Enable

***Disable**

Update

1.14 MOBILE PHONE/DISPLAY MODE

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

***Disable**

102267

Enable

102268

Enter Setup

Chapter 2

SELECTING OUTPUT INTERFACE

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

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

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

IN THIS CHAPTER

2.1 BT HID 50
2.2 BT SPP Slave 62
2.3 BT SPP Master 64
2.4 Keyboard Wedge via the Cradle 68
2.5 RS-232 via the Cradle 79
2.6 USB HID via the Cradle 84
2.7 USB Virtual COM via the Cradle 94

Update

2.1 BT HID

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

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

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…

1) Read the barcode above to activate BT HID and select a keyboard type.
2) Read the "Decimal Value" barcode on page 237. Refer to the table below for the number of desired keyboard type.
3) Read the "Validate" barcode on the same page to complete this setting.

BT HID

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

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

Update

2.1.2 RESET CONNECTION

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

Reset Connection

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

Enter Setup

2.1.3 KEYBOARD SETTINGS

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

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

Alphabets Layout

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

***Normal**

AZERTY

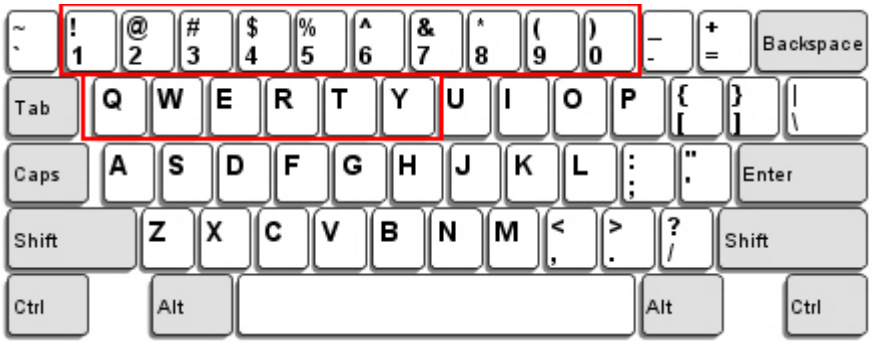
QWERTZ

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.

Update

US Keyboard Style – Normal

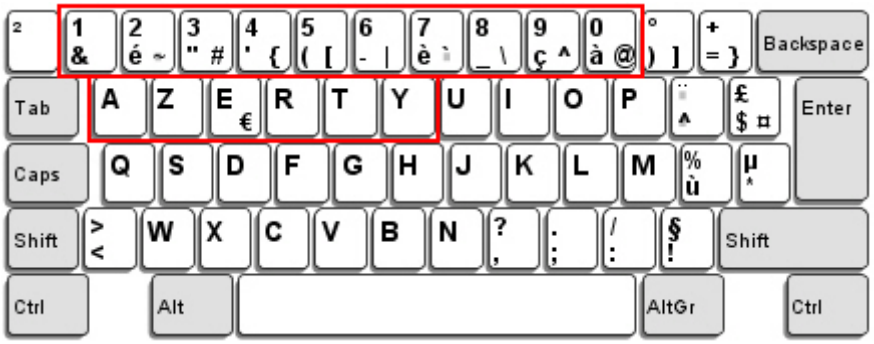
QWERTY layout, which is normally used in western countries.



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

French Keyboard Style – AZERTY

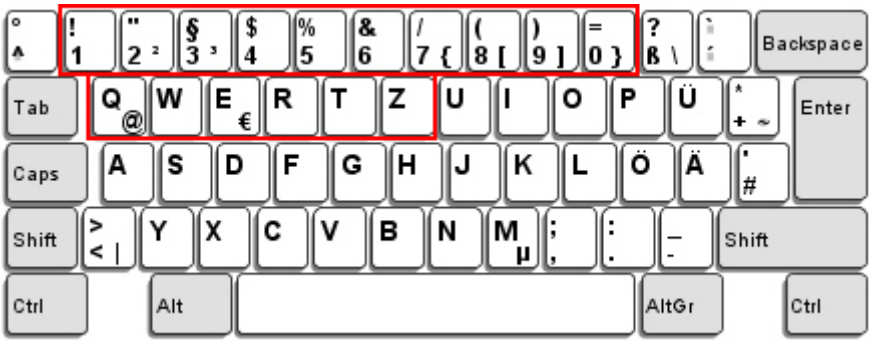
French layout; see below for French Keyboard Style.



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

German Keyboard Layout – QWERTZ

German layout; see below for German Keyboard Style.



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

Enter Setup

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.

Update

Capital Lock Type & Setting

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

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

***Normal**

Shift Lock

Capital Lock

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

Auto Detect

Capital Lock ON

Enter Setup

***Capital Lock OFF**

100052

Alphabets Transmission

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

Ignore Case

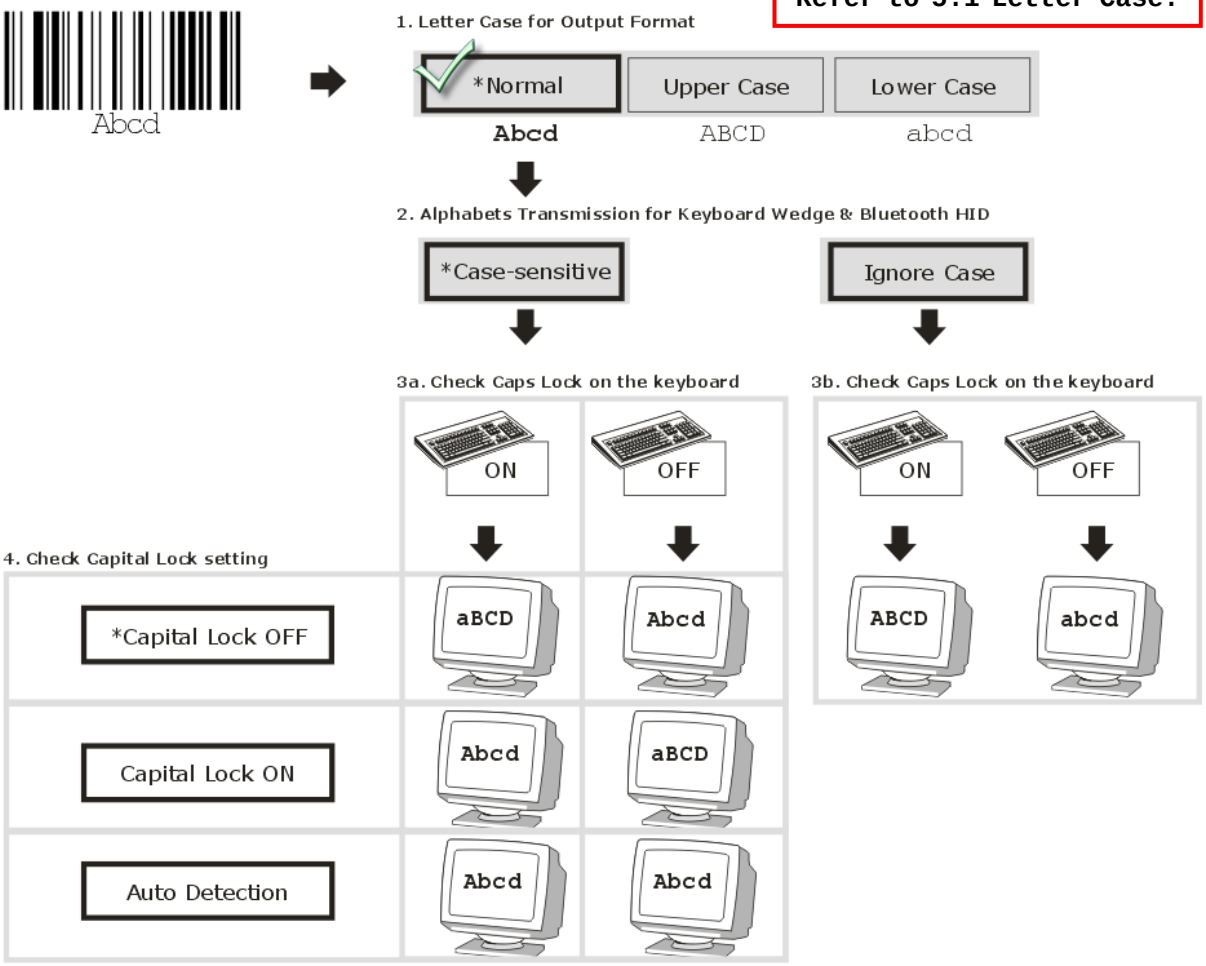
100051

***Case-sensitive**

100050

Refer to 5.1 Letter Case.

Abcd



Update

Digits Transmission

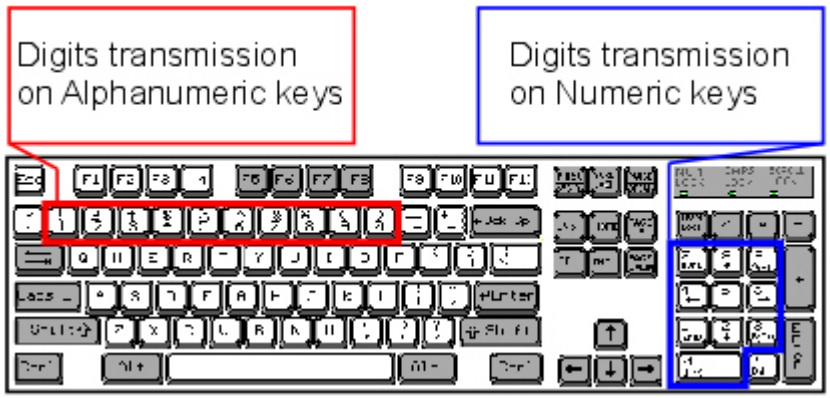
By default, the alphanumeric keypad is used for transmitting digits. Select “Numeric Keypad” if you wish to use the keys on the numeric keypad.

Numeric Key

100041

***Alphanumeric Key**

100040



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

Kanji Transmission

Kanji Transmission is supported by the scanner when either Bluetooth HID, Keyboard Wedge via 3656 or USB HID via 3656 is selected for the output interface. By Kanji Transmission, when the host computer is running on Japanese Windows O.S., the scanner is able to transmit Japanese characters including the Chinese characters used in modern Japanese writing system.

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

Enable

100067

***Disable**

100066

Enter Setup

2.1.4 INTER-CHARACTER DELAY

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

Inter-Character Delay… (*0~254)

100011

1) Read the barcode above to specify the inter-character delay.
2) Read the "Decimal Value" barcode on page 237 for the desired inter-character delay (millisecond).
3) Read the "Validate" barcode on the same page to complete this setting.

2.1.5 INTER-FUNCTION DELAY

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

Inter-Function Delay… (*0~254)

100012

1) Read the barcode above to specify the inter-function delay.
2) Read the "Decimal Value" barcode on page 237 for the desired inter-function delay (millisecond).
3) Read the "Validate" barcode on the same page to complete this setting.

Update

2.1.6 HID CHARACTER TRANSMIT MODE

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

***Batch Processing**

100064

By Character

100065

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

2.1.7 SPECIAL KEYBOARD FEATURE

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

***Apply**

100018

Bypass

100019

2.1.8 KEYPAD SUPPORT FOR IPHONE/IPAD

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

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

Show or Hide Keypad

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

Enter Setup

2.1.9 TRANSMIT SPEED

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

***Normal**

Fast

2.1.10 SIMPLE PAIRING FOR IPHONE/IPAD

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

***Disable**

Enable

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

Update

2.2 BT SPP SLAVE

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

2.2.1 ACTIVATE BT SPP SLAVE MODE

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 page 237 for the desired inter-function delay (millisecond).
3) Read the "Validate" barcode on the same page to complete this setting.

Enter Setup

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.
2) Read the "Decimal Value" barcode on page 237. For example, read "1" and "0" for the scanner to automatically shut down after idleness of 1 second.
3) Read the "Validate" barcode on the same page to complete this setting.

ACK/NAK Error Beep

Enable Error Beep

***Disable Error Beep**

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

Update

2.3 BT SPP MASTER

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

For BT SPP Master, refer 3.2.2 Configure Related Settings for related connection settings.

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

2.3.1 ACTIVATE BT SPP MASTER MODE

This is SPP Master Mode.

Activate BT SPP, Master Mode

How to connect with the target device?

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

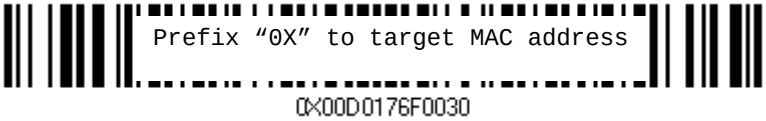
- “Set Connection”
- “MAC ID”

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

Usage:

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

Set Connection



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 have the scanner read the setup barcodes for entering the MAC address.

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

Enter MAC ID in Hexadecimal…

Usage:

1. Read the barcode above.
2. Read the “Hexadecimal Value” barcode on page 238 for the desired MAC address.
3. Read the “Validate” barcode on the same page to complete this setting.

Exit SPP Master Mode

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

Reset Connection

Update

2.3.2 INTER-FUNCTION DELAY

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

Inter-Function Delay… (*0~254)

1) Read the barcode above to specify the inter-function delay.
2) Read the "Decimal Value" barcode on page 237 for the desired inter-function delay (millisecond).
3) Read the "Validate" barcode on the same page 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)

100013

1) Read the barcode above to specify the time interval for the scanner to send data and wait for a response from the host.
2) Read the "Decimal Value" barcode on page 237. For example, read "1" and "0" for the scanner to automatically shut down after idleness of 1 second.
3) Read the "Validate" barcode on the same page to complete this setting.

ACK/NAK Error Beep

Enable Error Beep

100015

***Disable Error Beep**

100014

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

2.3.4 SWITCH BETWEEN MASTER/SLAVE MODE

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

Update

2.4 KEYBOARD WEDGE VIA THE CRADLE

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

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

Enter Setup

2.4.1 ACTIVATE KEYBOARD WEDGE & SELECT KEYBOARD TYPE

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

Activate the cradle Keyboard Wedge & Select Keyboard Type…

1) Read this barcode above to activate Keyboard Wedge and select a keyboard type.
2) Read the "Decimal Value" barcode on page 237. Refer to the table below for the number of desired keyboard type.
3) Read the "Validate" barcode on the same page to complete this setting.

Keyboard Wedge via the Cradle

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

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

Update

2.4.2 KEYBOARD SETTINGS

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

Alphabets Layout

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

***Normal**

AZERTY

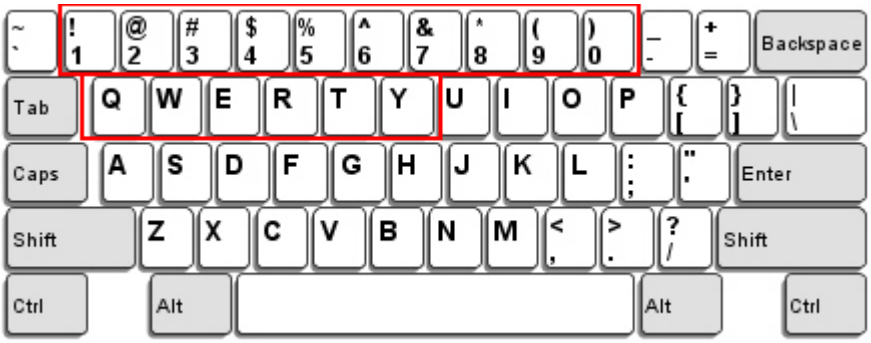
QWERTZ

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

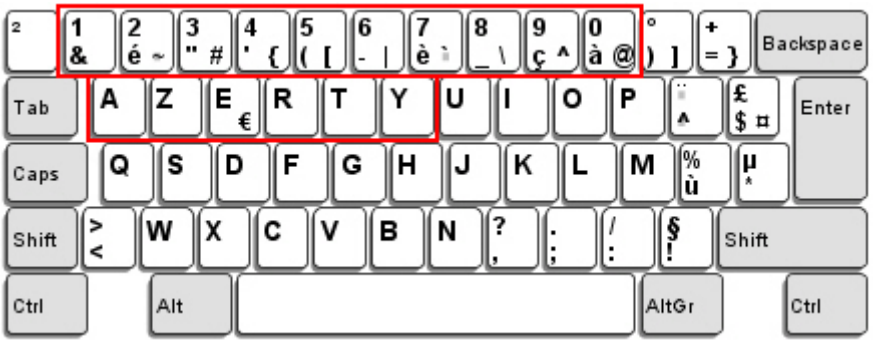
QWERTY layout, which is normally used in western countries.



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

French Keyboard Style – AZERTY

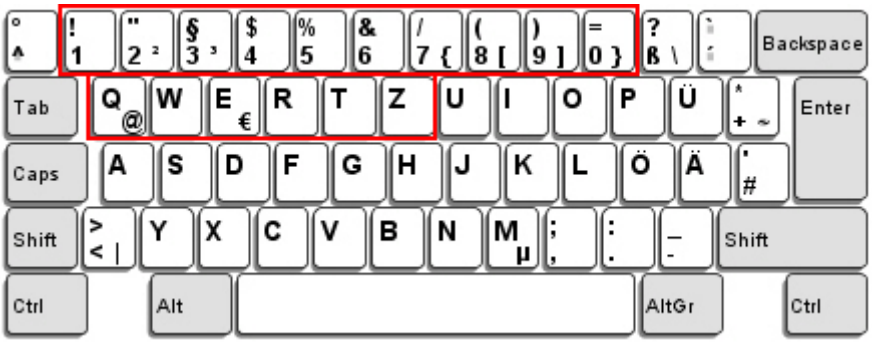
French layout; see below for French Keyboard Style.



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

German Keyboard Layout – QWERTZ

German layout; see below for German Keyboard Style.



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

Digits Layout

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

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

***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.

Enter Setup

Capital Lock Type & Setting

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

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

***Normal**

Shift Lock

Capital Lock

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

Auto Detect

Capital Lock ON

Update

***Capital Lock OFF**

Enter Setup

Alphabets Transmission

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

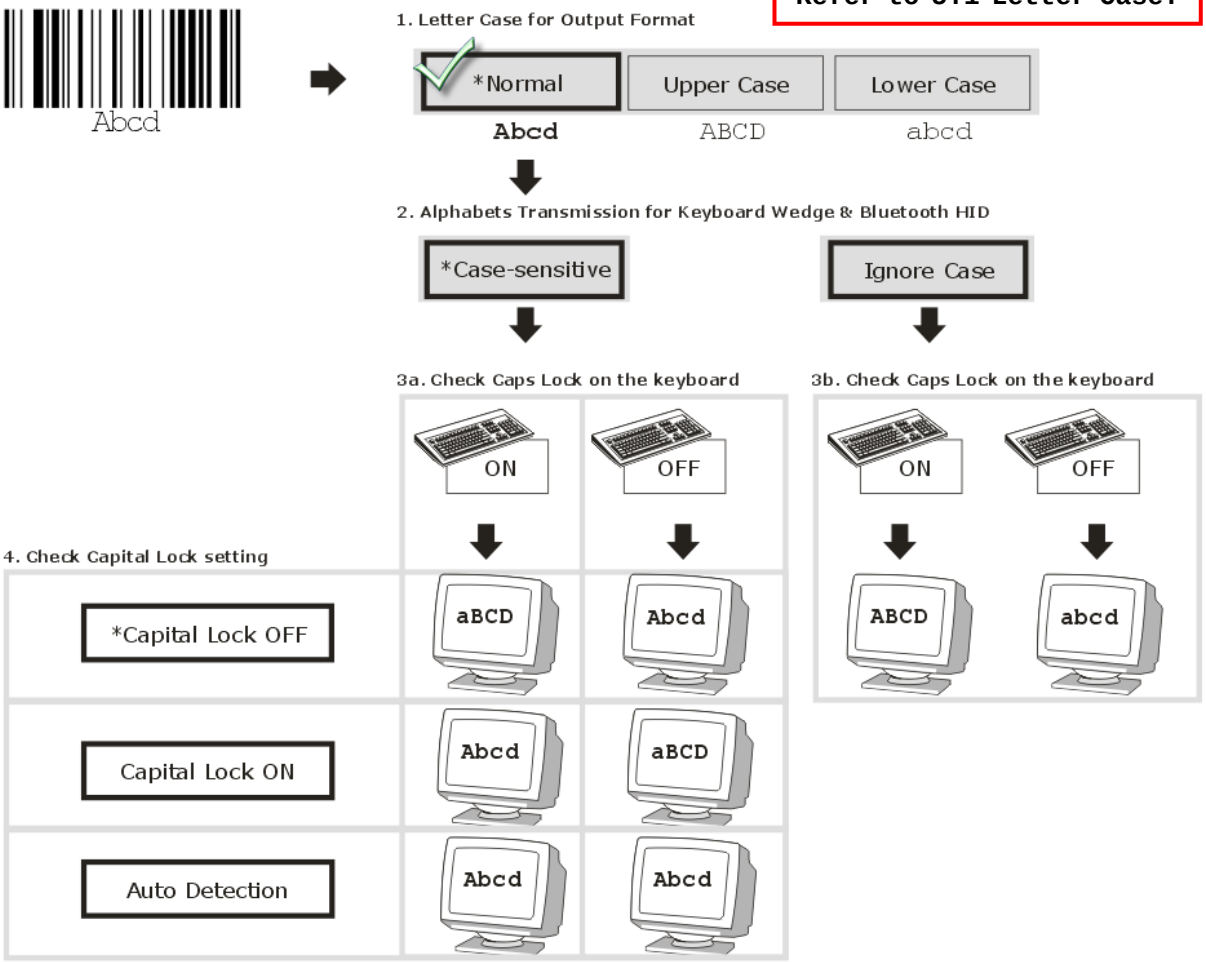
Ignore Case

100051

***Case-sensitive**

100050

Refer to 5.1 Letter Case.



Update

Digits Transmission

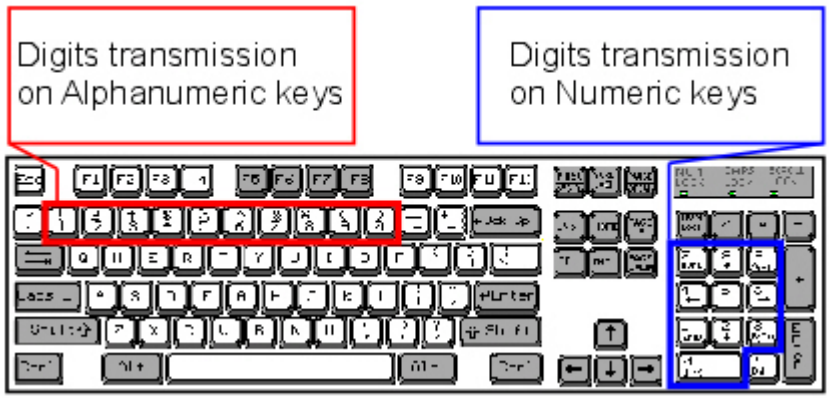
By default, the alphanumeric keypad is used for transmitting digits. Select “Numeric Keypad” if you wish to use the keys on the numeric keypad.

Numeric Key

100041

***Alphanumeric Key**

100040



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

Kanji Transmission

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

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

Enable

100067

***Disable**

100066

Enter Setup

ALT Composing

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

Yes

***No**

Laptop Support

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

Enable

***Disable**

2.4.3 INTER-CHARACTER DELAY

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

Inter-Character Delay… (*0~254)

1) Read the barcode above to specify the inter-character delay.
2) Read the "Decimal Value" barcode on page 237 for the desired inter-character delay (millisecond).
3) Read the "Validate" barcode on the same page to complete this setting.

Update

2.4.4 INTER-FUNCTION DELAY

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

Inter-Function Delay… (*0~254)

100012

1) Read the barcode above to specify the inter-function delay.
2) Read the "Decimal Value" barcode on page 237 for the desired inter-function delay (millisecond).
3) Read the "Validate" barcode on the same page to complete this setting.

2.4.5 SPECIAL KEYBOARD FEATURE

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

***Apply**

100018

Bypass

100019

Enter Setup

2.5 RS-232 VIA THE CRADLE

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

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

2.5.1 ACTIVATE RS-232 INTERFACE

Activate the cradle RS-232 Interface

100001

2.5.2 BAUD RATE

***115200 bps**

100080

57600 bps

100081

38400 bps

100082

19200 bps

100083

9600 bps

100084

Update

4800 bps

2400 bps

1200 bps

600 bps

2.5.3 DATA BITS

***8 bits**

7 bits

2.5.4 PARITY

***No parity**

Even

Odd

Enter Setup

2.5.5 STOP BIT

2 stop bits

***1 stop bit**

2.5.6 FLOW CONTROL

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

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

***None**

Scanner Ready

Data Ready

Invert Data Ready

Update

2.5.7 INTER-CHARACTER DELAY

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

Inter-Character Delay… (*0~254)

1) Read the barcode above to specify the inter-character delay.
2) Read the "Decimal Value" barcode on page 237 for the desired inter-character delay (millisecond).
3) Read the "Validate" barcode on the same page to complete this setting.

2.5.8 INTER-FUNCTION DELAY

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

Inter-Function Delay… (*0~254)

1) Read this barcode above to specify the inter-function delay.
2) Read the "Decimal Value" barcode on page 237 for the desired inter-function delay (millisecond).
3) Read the "Validate" barcode on the same page to complete this setting.

Enter Setup

2.5.9 ACK/NAK TIMEOUT

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

ACK/NAK Time-out after … (*0~99)

1) Read the barcode above to specify the time interval for the scanner to send data and wait for a response from the host.
2) Read the "Decimal Value" barcode on page 237. For example, read "1" and "0" for the scanner to automatically shut down after idleness off 1 second.
3) Read the "Validate" barcode on the same page to complete this setting.

ACK/NAK Error Beep

Enable Error Beep

***Disable Error Beep**

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

Update

2.6 USB HID VIA THE CRADLE

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

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

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

Enter Setup

2.6.1 ACTIVATE USB HID & SELECT KEYBOARD TYPE

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

Activate the cradle USB HID & Select Keyboard Type…

1) Read the barcode above to activate USB HID and select a keyboard type.
2) Read the "Decimal Value" barcode on page 237. Refer to the table below for the number of desired keyboard type.
3) Read the "Validate" barcode on the same page to complete this setting.

USB HID

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

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

Update

2.6.2 KEYBOARD SETTINGS

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

Alphabets Layout

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

***Normal**

AZERTY

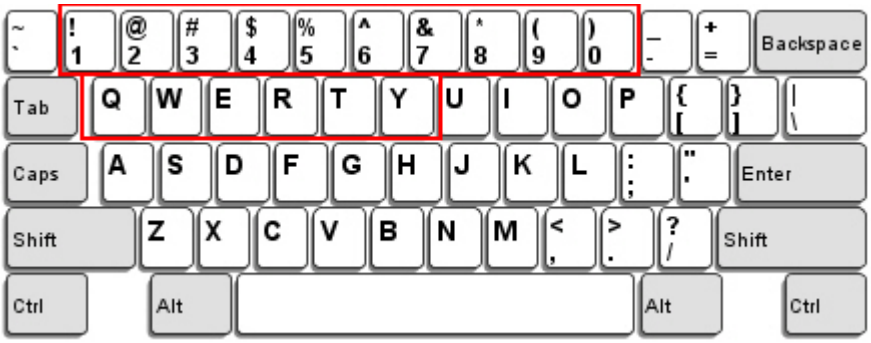
QWERTZ

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

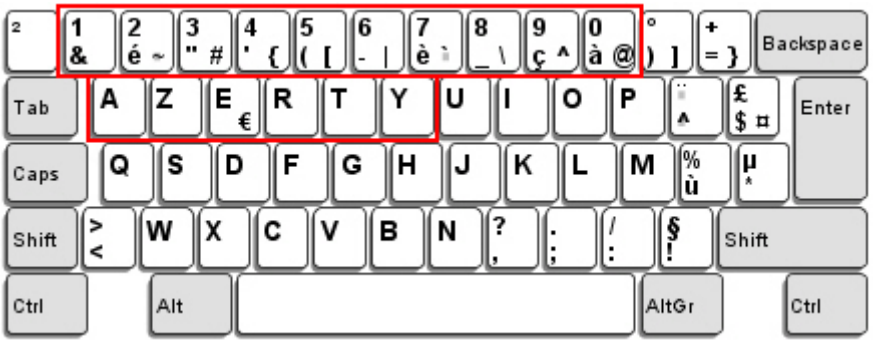
QWERTY layout, which is normally used in western countries.



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

French Keyboard Style – AZERTY

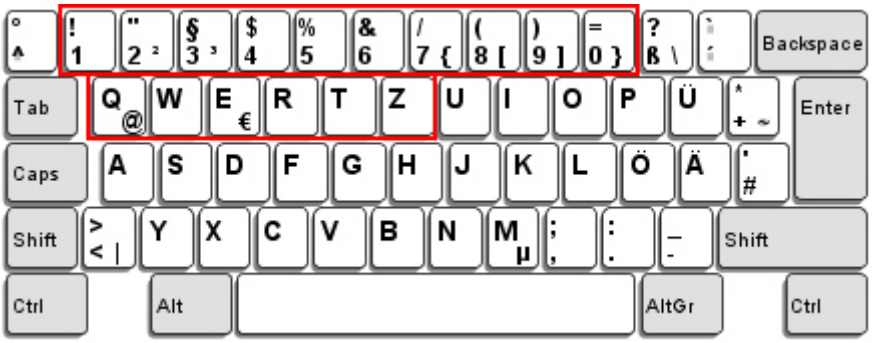
French layout; see below for French Keyboard Style.



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

German Keyboard Layout – QWERTZ

German layout; see below for German Keyboard Style.



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

Digits Layout

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

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

***Normal**

Upper Row

Lower Row

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

Enter Setup

Capital Lock Type & Setting

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

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

***Normal**

Shift Lock

Capital Lock

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

Auto Detect

Capital Lock ON

Update

***Capital Lock OFF**

100052

Alphabets Transmission

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

Ignore Case

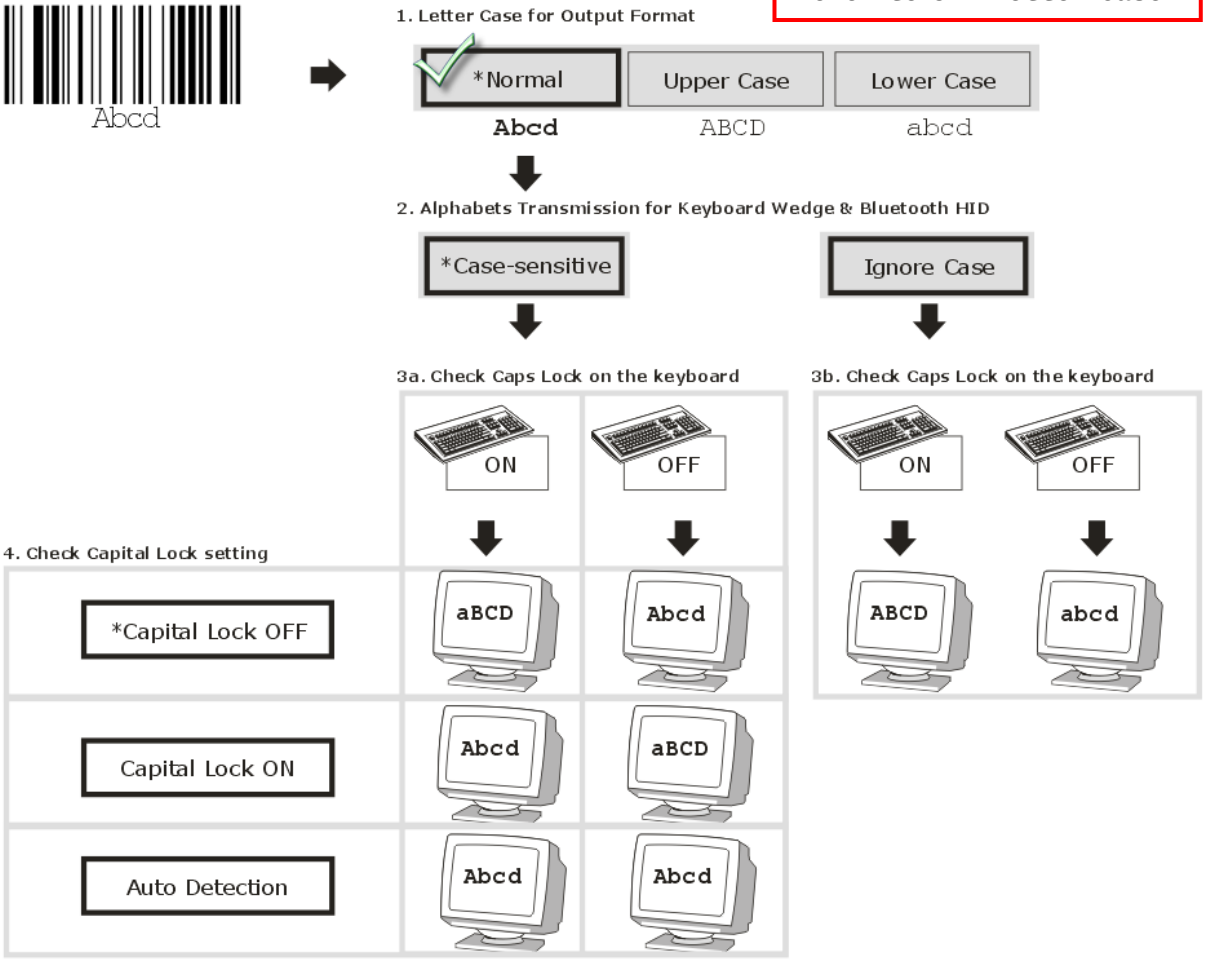
100051

***Case-sensitive**

100050

Refer to 5.1 Letter Case.

Abcd



Enter Setup

Digits Transmission

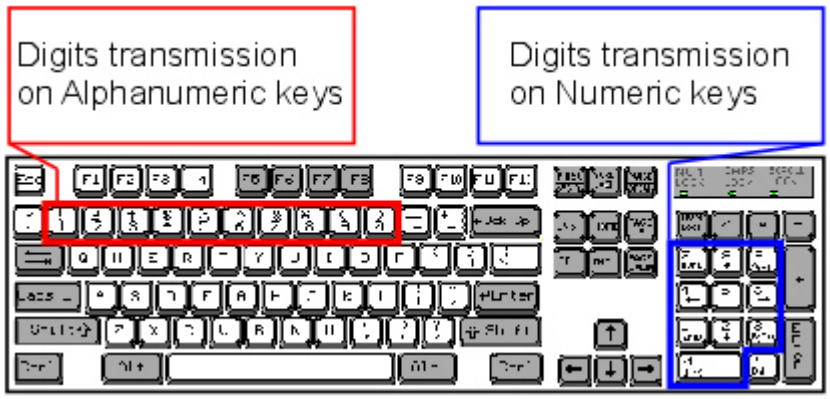
By default, the alphanumeric keypad is used for transmitting digits. Select “Numeric Keypad” if you wish to use the keys on the numeric keypad.

Numeric Key

100041

***Alphanumeric Key**

100040



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

Kanji Transmission

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

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

Enable

100067

***Disable**

100066

Update

2.6.3 INTER-CHARACTER DELAY

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

Inter-Character Delay… (*0~254)

100011

1) Read the barcode above to specify the inter-character delay.
2) Read the "Decimal Value" barcode on page 237 for the desired inter-character delay (millisecond).
3) Read the "Validate" barcode on the same page to complete this setting.

2.6.4 INTER-FUNCTION DELAY

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

Inter-Function Delay… (*0~254)

100012

1) Read the barcode above to specify the inter-function delay.
2) Read the "Decimal Value" barcode on page 237 for the desired inter-function delay (millisecond).
3) Read the "Validate" barcode on the same page to complete this setting.

Enter Setup

2.6.5 HID CHARACTER TRANSMIT MODE

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

***Batch Processing**

By Character

2.6.6 SPECIAL KEYBOARD FEATURE

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

***Apply**

Bypass

Update

2.7 USB VIRTUAL COM VIA THE CRADLE

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

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

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

2.7.1 ACTIVATE USB VIRTUAL COM

Activate the cradle USB Virtual COM

100004

2.7.2 INTER-FUNCTION DELAY

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

Inter-Function Delay… (*0~254)

100012

1) Read the barcode above to specify the inter-function delay.
2) Read the "Decimal Value" barcode on page 237 for the desired inter-function delay (millisecond).
3) Read the "Validate" barcode on the same page to complete this setting.

Enter Setup

2.7.3 ACK/NAK TIMEOUT

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

ACK/NAK Time-out after … (*0~99)

100013

1) Read the barcode above to specify the time interval for the scanner to send data and wait for a response from the host.
2) Read the "Decimal Value" barcode on page 237. For example, read "1" and "0" for the scanner to automatically shut down after being idle for 1 second.
3) Read the "Validate" barcode on the same page to complete this setting.

ACK/NAK Error Beep

Enable Error Beep

100015

***Disable Error Beep**

100014

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

Update

Enter Setup

Chapter 3

SETTING UP A WPAN CONNECTION

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

To establish a connection via the cradle after reading "Set Connection" and "Serial No." labels ...

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

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

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

IN THIS CHAPTER

3.1 Connecting via the Cradle 98
3.2 Connecting via *Bluetooth*® Dongle 100

3.1 CONNECTING VIA THE CRADLE

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

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

3.1.1 CONNECT TO THE CRADLE

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

- “Set Connection” barcode
- “Serial Number” barcode

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

Read the “Set Connection” barcode first, and then the “Serial Number” barcode. If the “Set Connection” barcode on the cradle is illegible, try this one —

Set Connection

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

Enter Setup

3.1.2 CHANGE INTERFACE

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

I) Have the scanner read the “Set Connection” and “Serial Number” barcodes at the back of the cradle.

2) Within two minutes, connect the interface cable between the cradle and your computer. For USB Virtual COM, you may need to install its driver first!

3) The scanners will connect to your computer via the cradle.

4) Have one scanner read the “Enter Setup” barcode to enter the configuration mode.

5) Have the scanner read the desired interface barcode and configure its related settings –

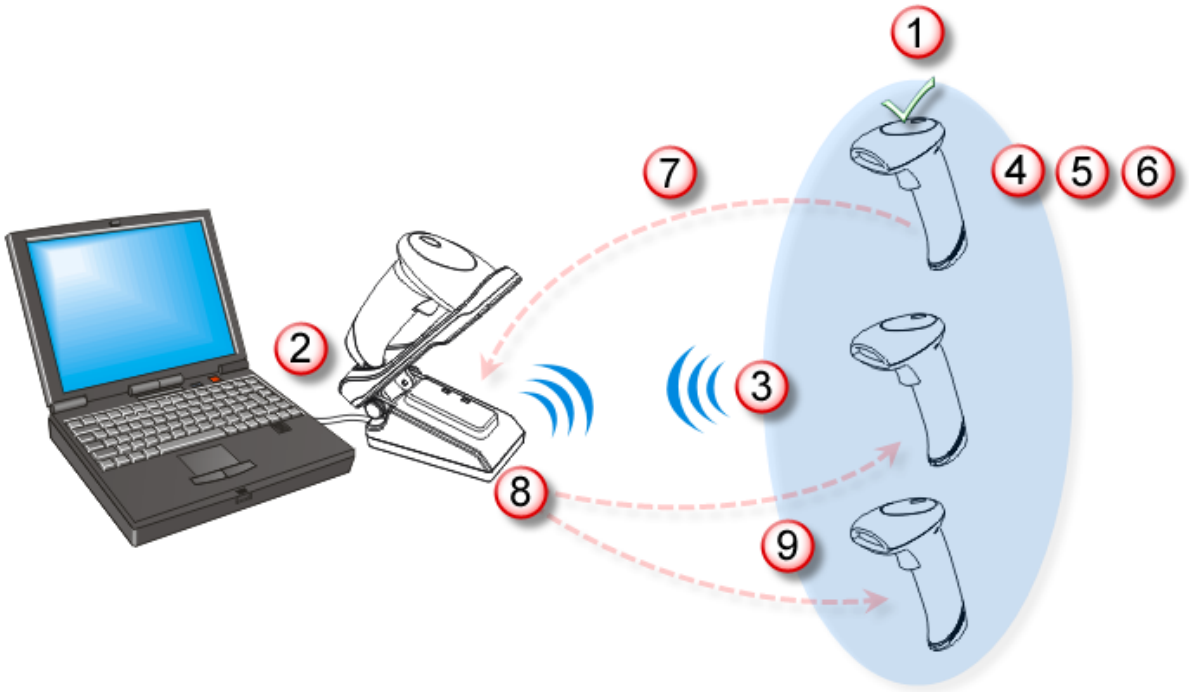
- “Activate Keyboard Wedge & Select Keyboard Type”
- “Activate RS-232”
- “Activate USB HID & Select Keyboard Type”
- “Activate USB Virtual COM”

6) Have the scanner read the “Update” barcode to exit the configuration mode.

7) After the scanner resumes connection with the cradle, it will pass the interface-related settings to the cradle.

8) Upon receipt of the new settings, the cradle will initialize itself.

9) Updated with new settings, the cradle will pass the settings to other connected scanners.



Update

3.2 CONNECTING VIA *BLUETOOTH*® DONGLE

3.2.1 CHANGE INTERFACE

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

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

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

Enter Setup

3.2.2 CONFIGURE RELATED SETTINGS

Sniff Mode (Power-saving)

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

***Enable**

Disable

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**

Disable

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

Update

Authentication

When any changes are made to authentication and PIN code on the scanner side, you will have to remove the scanner from the paired device list (called unpairing) and go through the whole process to re-establish the connection.

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

Enable Authentication with Preset PIN

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

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

Use Preset PIN

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

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

Enter PIN in Hexadecimal …

Enter PIN in Decimal…

3. Read the “Decimal Value” barcode on page 237 or the “Hexadecimal Value” barcode on page 238 for the desired digits or character string.

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

Clear PIN Code

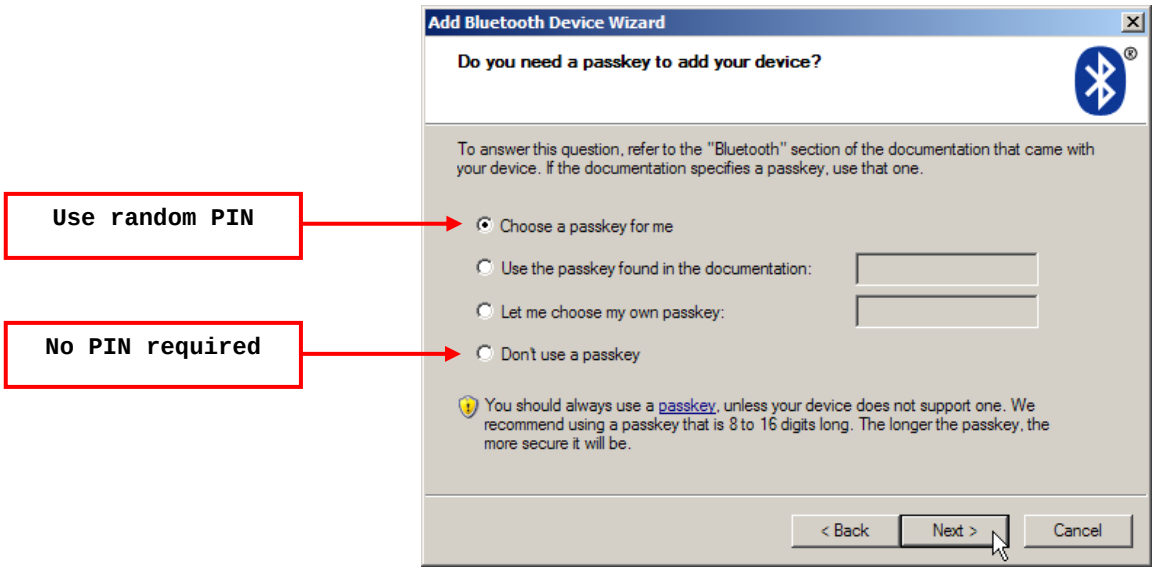
4. Read the “Validate” barcode to complete this setting.

Enable Authentication with Random PIN or No Authentication

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

***No PIN or use random PIN**

Enter Setup



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

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 disabled by default.

***Disable**

100160

Enable

100161

Update

3.2.3 CONNECT TO DONGLE

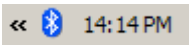
The procedure goes through associating devices for establishing a WPAN connection, which is pretty much the same except for the software you are using. If your computer is running Microsoft® Windows® XP Service Pack 3 (SP3) or Windows Vista® Service Pack 1 (SP1), you can use the software support that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

BT HID Procedure

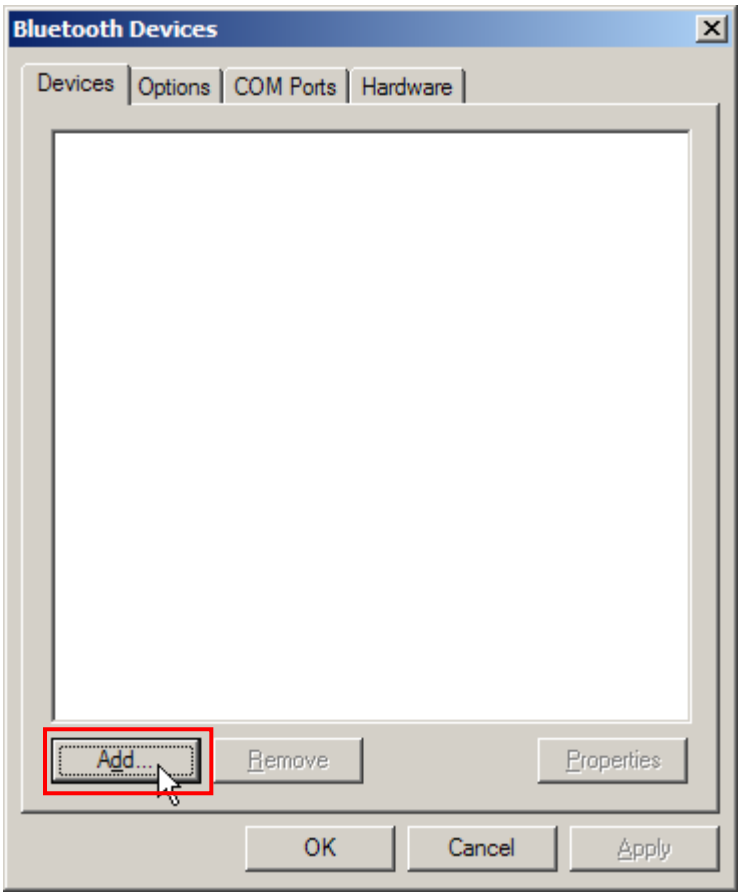
By default, BT HID is activated on the scanner, and the keyboard type is set to PCAT (US). When BT HID is re-activated, you will have to select a keyboard type to complete this setting.

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

BT SPP Procedure

1. Turn on the *Bluetooth*® function on your computer, running Windows XP SP2.
2. Double-click the *Bluetooth*® icon from the lower right of the taskbar. 

   Alternatively, you may go to **Control Panel** > **Bluetooth Devices**.
3. Click [Add] to search devices nearby.



Enter Setup

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

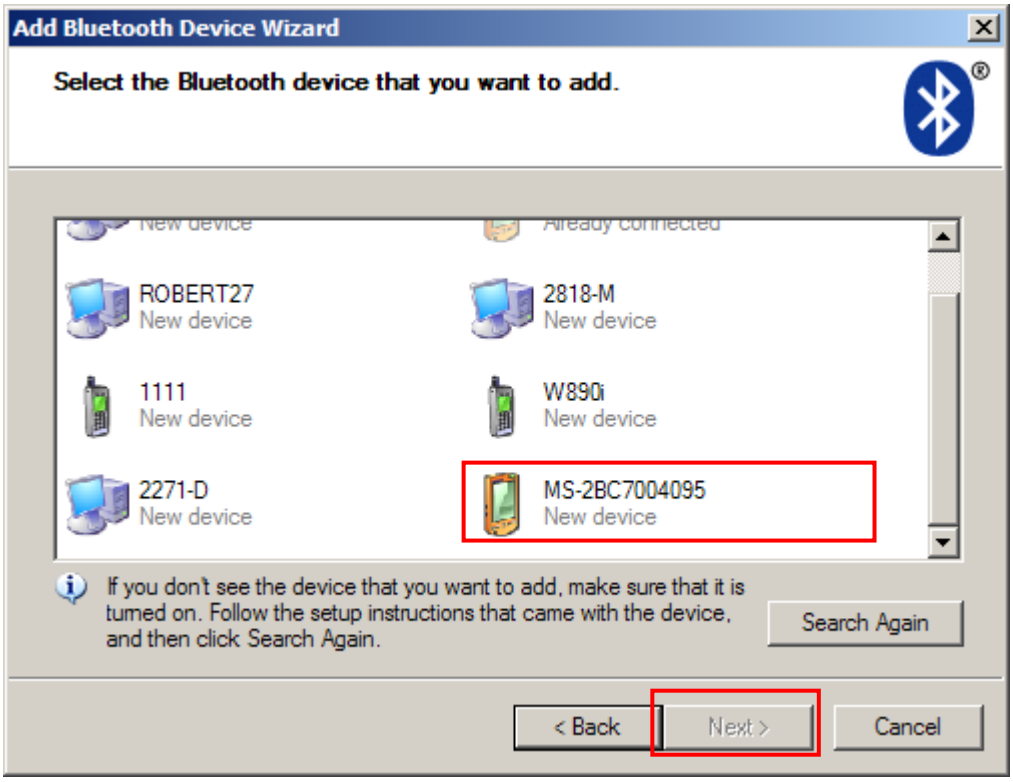
5. Click [Next].

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

   The scanner will appear with its “serial number” as the device name. You may double-check the “Serial Number” label on the scanner to ensure connecting with the correct scanner. Select the target scanner. If the target scanner does not appear on the list, click [Search Again] to refresh the list. The scanner might enter Suspend Mode now, and you can press the trigger to have it active again (=discoverable). It will then stay active for a specified period of time (2 minutes by default) and wait for PC to establish a connection.

Update

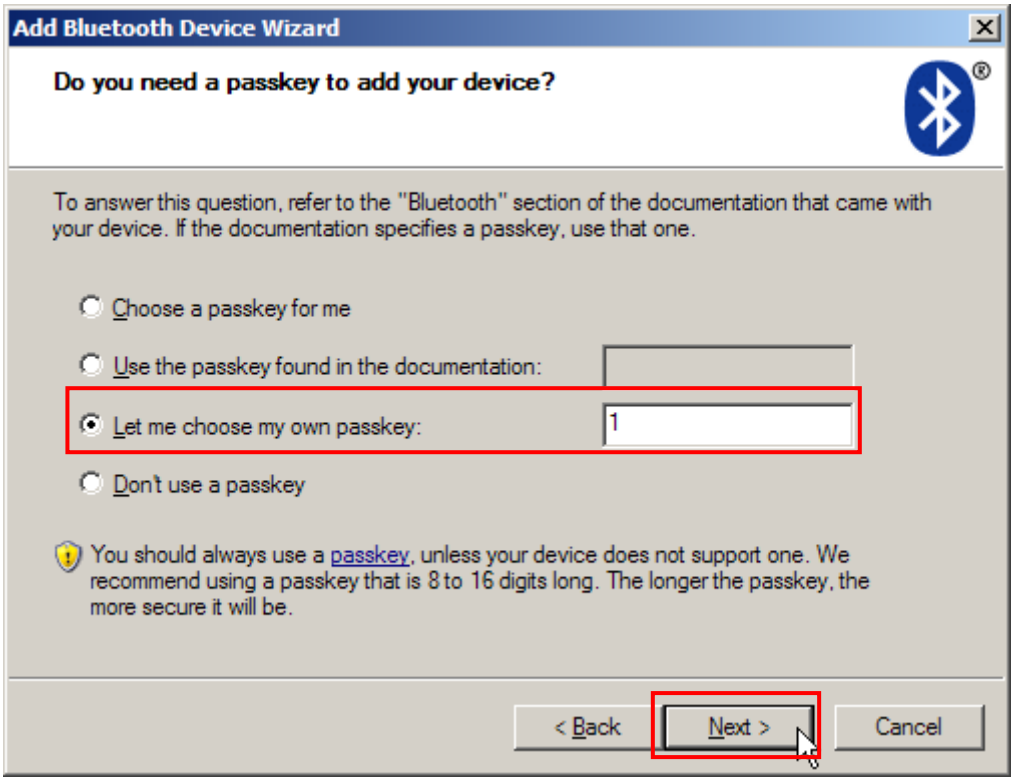
7. Click [Next].

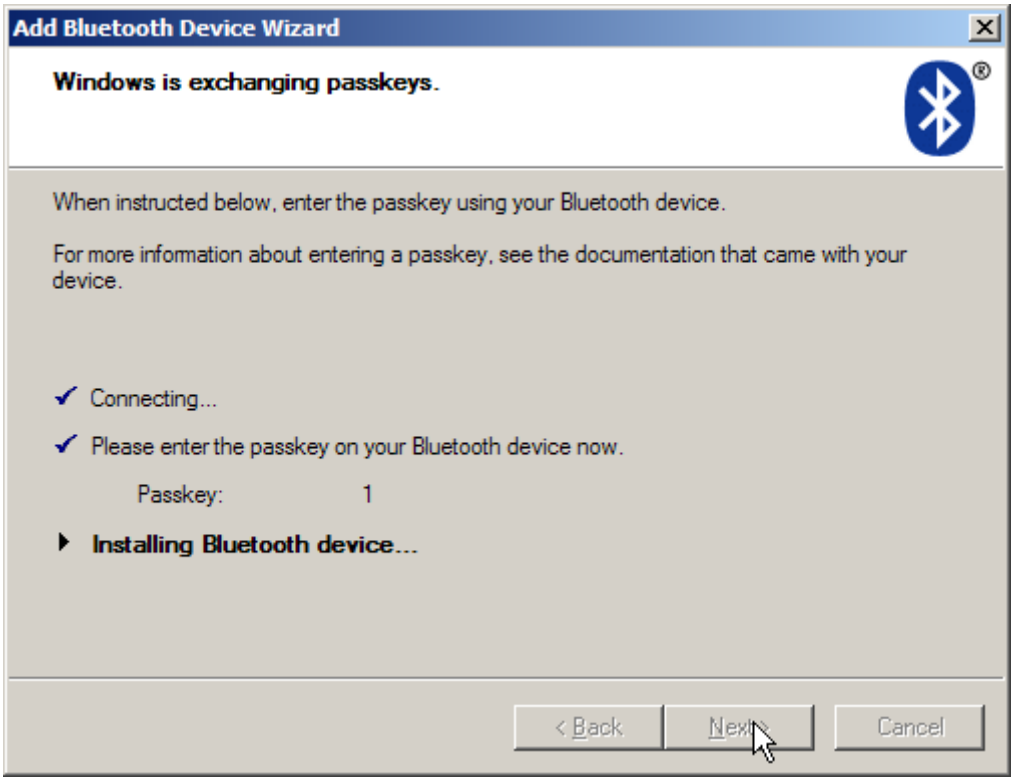


8. Enter the passkey for authentication, which must be exactly the same as configured for the scanner.

Enter Setup

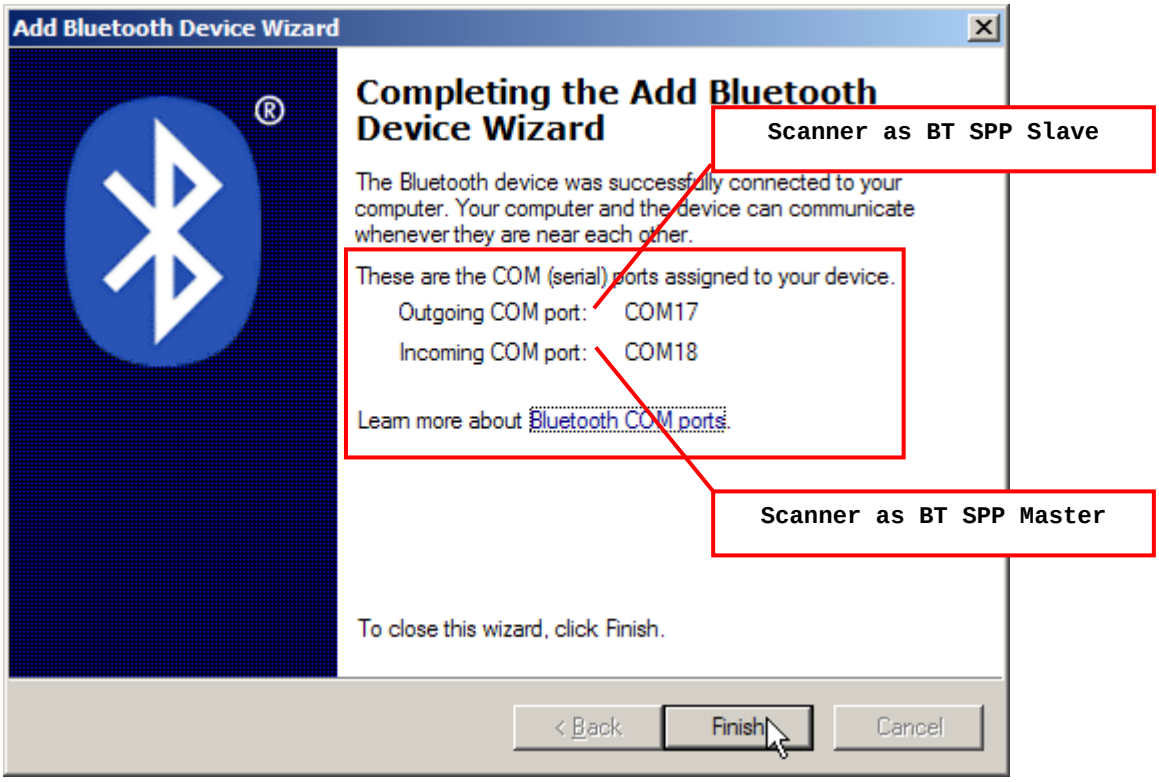
9. Click [Next]. Wait for a few seconds for Windows to exchange passkeys.





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

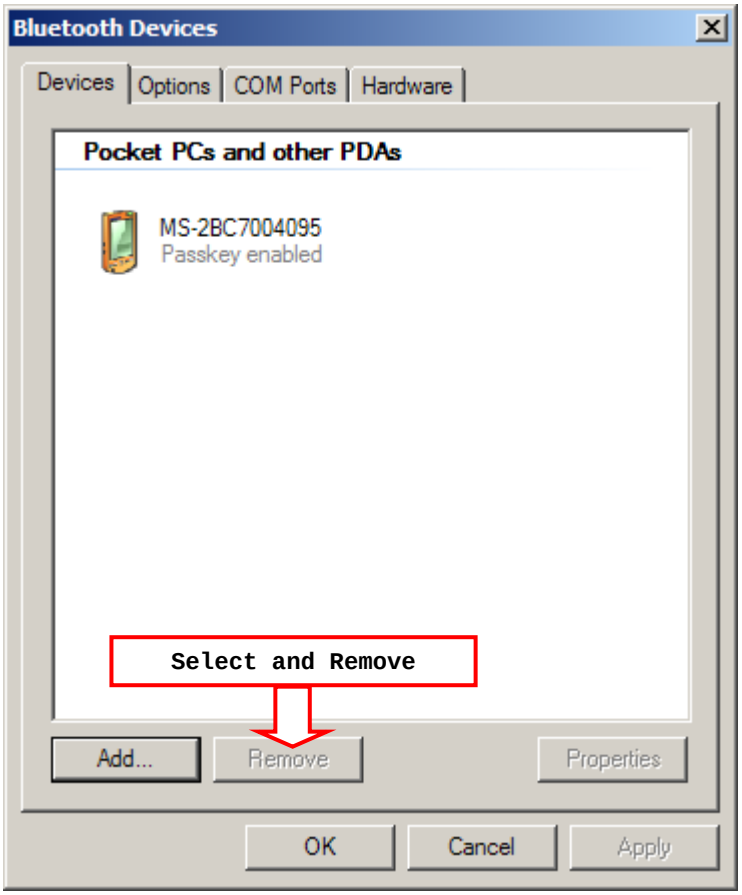
10. Click [Finish].



Enter Setup

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

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

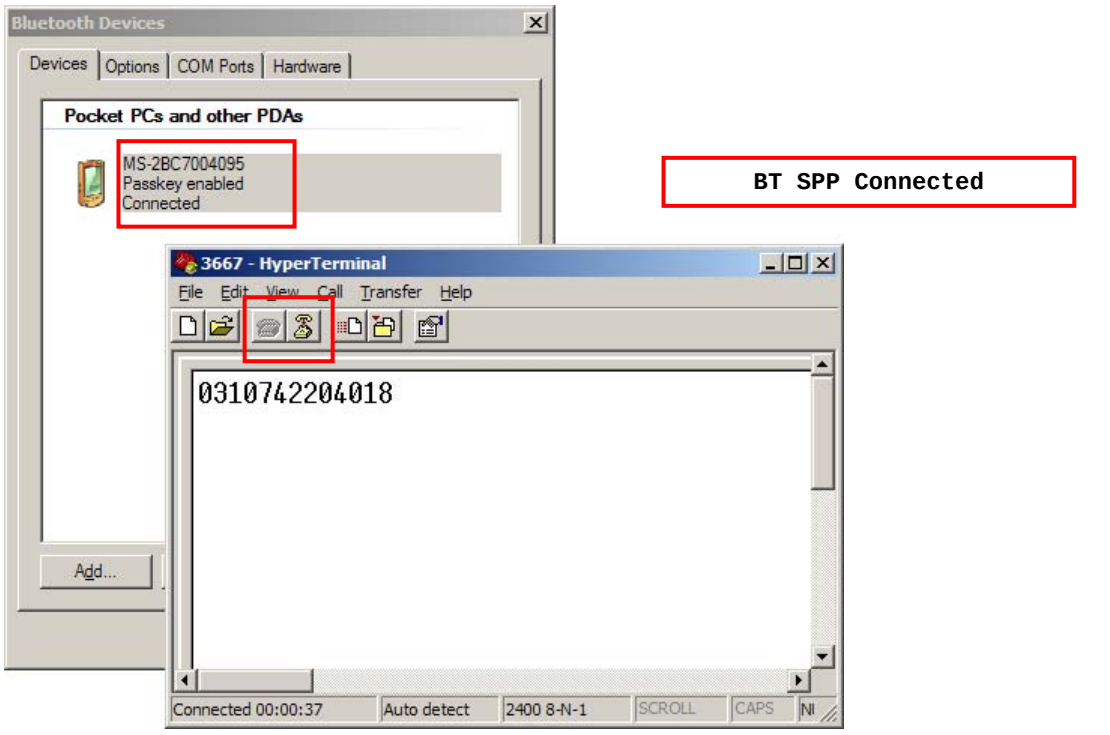


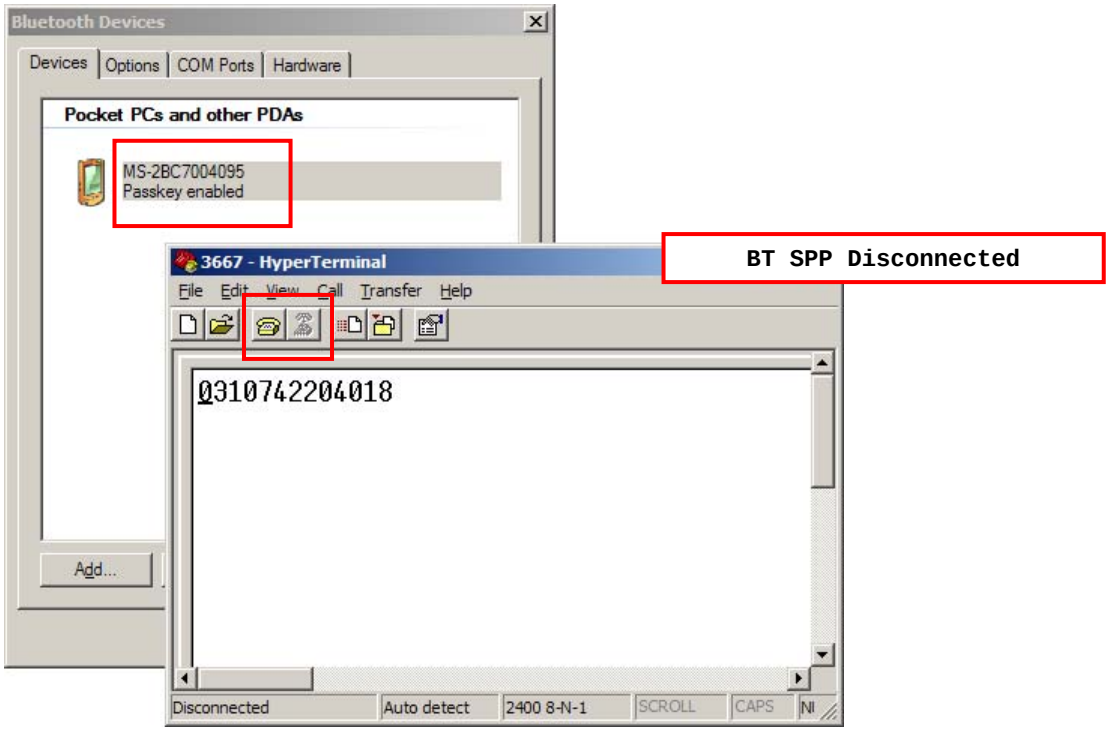
Note: When any changes are made to authentication and PIN code on the scanner side, or you want to change to use BT HID, it is suggested that you remove the scanner from the paired device list (called unpairing) and go through the whole process to re-establish the connection.

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

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

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


Bluetooth Devices
Devices
Options
COM Ports
Hardware
Pocket PCs and other PDAs
MS-2BC7004095
Passkey enabled
Connected
Add...
3667 - HyperTerminal
File Edit View Call Transfer Help
0310742204018
Connected 00:00:37
Auto detect
2400 8-N-1
SCROLL
CAPS
BT SPP Connected


Bluetooth Devices
Devices
Options
COM Ports
Hardware
Pocket PCs and other PDAs
MS-2BC7004095
Passkey enabled
Add...
3667 - HyperTerminal
File Edit View Call Transfer Help
0310742204018
Disconnected
Auto detect
2400 8-N-1
SCROLL
CAPS
BT SPP Disconnected

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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Update

4.1 CODABAR

***Enable**

100313

Disable

100312

4.1.1 START/STOP TRANSMISSION

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

Transmit Start/Stop Characters

100441

***Do Not Transmit**

100440

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

100443

***Do Not Apply**

100442

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

Enter Setup

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.

- 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 page 237 for the desired length.

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

Update

4.2 CODE 25 – INDUSTRIAL 25

***Enable**

100307

Disable

100306

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.

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

***Enable Max./Min. Length (0~55)…**

100601

Enable Fixed Length(s)…

100600

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

100602

Min. Length (*4) or Fixed Length 2

100603

3) Read the “Decimal Value” barcode on page 237 for the desired length.

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

Enter Setup

4.3 CODE 25 – 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

Update

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

Enter Setup

4.3.4 CODE LENGTH QUALIFICATION

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

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

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

***Enable Max./Min. Length (0~55)…**

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 page 237 for the desired length.

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

Update

4.4 CODE 25 – MATRIX 25

Enable

100311

***Disable**

100310

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

100433

***Do Not Verify**

100432

4.4.2 TRANSMIT CHECK DIGIT

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

***Transmit Matrix 25 Check Digit**

100435

Do Not Transmit

100434

Enter Setup

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.

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

***Enable Max./Min. Length (0~55)…**

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 page 237 for the desired length.

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

4.5 CODE-25 – CHINESE 25

Enable

***Disable**

4.6 ITALIAN PHARMACODE (CODE32)

Enable

***Disable**

Note: Code 39 must be enabled first.

Enter Setup

4.7 CODE 39

***Enable**

Disable

4.7.1 VERIFY CHECK DIGIT

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

Verify Code 39 Check Digit

***Do Not Verify**

4.7.2 TRANSMIT CHECK DIGIT

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

***Transmit Code 39 Check Digit**

Do Not Transmit

Update

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

***Standard Code 39**

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

7.7.4 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 digits(s) the barcode contains.

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

***Enable Max./Min. Length (1~55)…**

Enable Fixed Length(s)…

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

Enter Setup

Max. Length (*55) or Fixed Length 1

Min. Length (*4) or Fixed Length 2

7) Read the “Decimal Value” barcode on page 237 for the desired length.

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

Update

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.

Code 39 Full ASCII

***Standard Code 39**

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

Enter Setup

4.9 CODE 93

***Enable**

100315

Disable

100314

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 digits(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)…**

102226

Enable Fixed Length(s)…

102225

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

102227

Min. Length (*4) or Fixed Length 2

102228

3) Read the “Decimal Value” barcode on page 237 for the desired length.

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

Update

4.10 CODE 128

***Enable**

Disable

Enter Setup

4.11 GS1-128 (EAN-128)

***Enable**

Disable

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

4.11.1 CODE ID TRANSMISSION

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

Transmit 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).

Enable Field Separator…

1) Read the barcode above to enable field separator.
2) Read the "Hexadecimal Value" barcode on page 238 for the desired character string.
3) Read the "Validate" barcode to complete this setting.

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

Update

4.12 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 page 237 for the desired redundancy.
3) Read the "Validate" barcode on the same page to complete this setting.

Update

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 CODE ID SELECTION

Select a desired Code ID to use:

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

Use "]C1"

100517

***Use "]e0"**

100516

Enter Setup

4.13.2 GS1 DATABAR OMNIDIRECTIONAL (RSS-14)

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

***Disable**

The settings below apply to Group I symbologies only:

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

Transmit Code ID

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

***Transmit RSS-14 Code ID**

Do Not Transmit

Transmit Application ID

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

***Transmit RSS-14 Application ID**

Do Not Transmit

Update

4.13.3 GS1 DATABAR EXPANDED (RSS EXPANDED)

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

***Disable**

The settings below apply to Group II symbologies only:

- GS1 DataBar Expanded
- GS1 DataBar Expanded Stacked

Transmit Code ID

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

***Transmit RSS Expanded Code ID**

Do Not Transmit

Enter Setup

4.13.4 GS1 DATABAR LIMITED (RSS LIMITED)

Enable RSS Limited (Group III)

***Disable**

Transmit Code ID

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

***Transmit RSS Limited Code ID**

Do Not Transmit

Transmit Application ID

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

***Transmit RSS Limited Application ID**

Do Not Transmit

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**

Enter Setup

4.14 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 in the data being transmitted.

***Last Digit Not Transmitted**

100452

Both Digits Transmitted

100453

Both Digits Not Transmitted

100454

Update

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.

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

***Enable Max./Min. Length (0~55)…**

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 page 237 for the desired length.

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

Enter Setup

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**

Update

4.16 EAN-13

EAN-13

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

Disable

EAN-13 Addon 2

Enable EAN-13 Addon 2

***Disable**

EAN-13 Addon 5

Enable EAN-13 Addon 5

***Disable**

Enter Setup

4.16.1 ISBN CONVERSION

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

Convert EAN-13 to ISBN

***Do Not Convert**

4.16.2 ISSN CONVERSION

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

Convert EAN-13 to ISSN

***Do Not Convert**

Update

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

***Disable**

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

Enter Setup

4.18 UPC-A

UPC-A

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

Disable

UPC-A Addon 2

Enable UPC-A Addon 2

***Disable**

UPC-A Addon 5

Enable UPC-A Addon 5

***Disable**

Update

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 SYSTEM NUMBER TRANSMISSION

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

Enter Setup

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**

Update

4.19.1 SYSTEM NUMBER SELECTION

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

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

System Number 0 & 1

***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**

Enter Setup

4.19.3 SYSTEM NUMBER TRANSMISSION

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

Transmit UPC-E System Number

***Do Not Transmit**

4.19.4 TRANSMIT CHECK DIGIT

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

***Transmit UPC-E Check Digit**

Do Not Transmit

Update

4.20 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 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)…**

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 page 221 for the desired length.

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

Update

4.21 COMPOSITE CODE

4.21.1 COMPOSITE CC-A/B

Enable Composite CC-A/B

***Disable**

4.21.2 COMPOSITE CC-C

Enable Composite CC-C

***Disable**

4.21.3 COMPOSITE TLC-39

Enable Composite TLC-39

***Disable**

Enter Setup

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

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**

Update

4.22 US POSTAL CODE

4.22.1 US POSTNET

***Enable US Postnet**

Disable

4.22.2 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

Enter Setup

4.23 UK POSTAL CODE

4.23.1 UK POSTNET

***Enable UK Postnet**

Disable

4.23.2 TRANSMIT CHECK DIGIT

***Transmit UK Postal Check Digit**

Do Not Transmit

Update

4.24 MORE POSTAL CODE

4.24.1 JAPAN POSTNET

***Enable Japan Postal**

102023

Disable

102022

4.24.2 AUSTRALIAN PLANET

***Enable Australian Postal**

102025

Disable

102024

4.24.3 DUTCH PLANET

***Enable Dutch Postal**

102027

Disable

102026

4.24.4 USPS 4CB/ONE CODE/INTELLIGENT MAIL PLANET

Enable USPS 4CB/ One Code/ Intelligent Mail

102029

***Disable**

102028

Enter Setup

4.24.5 USPS FICS POSTAL

Enable UPU FICS Postal

***Disable**

Update

4.25 2D SYMBOLOGIES

4.25.1 PDF417

***Enable PDF417**

Disable

4.25.2 MICROPDF417

Enable MicroPDF417

***Disable**

Enter Setup

4.25.3 DATA MATRIX

***Enable Data Matrix**

Disable

Data Matirx Mirror

Decide whether to decode mirror image Data Matrix barcodes.

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

***Never**

Always

Auto

Update

4.25.4 MAXICODE

***Enable Maxicode**

Disable

4.25.5 QR CODE

***Enable QR Code**

Disable

4.25.6 MICROQR

***Enable MicroQR**

Disable

4.25.7 AZTEC

***Enable Aztex**

Disable

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: Each Macro PDF barcode has a unique identifier, thus leave adequate space between them while printing barcodes. 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**

Update

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

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

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

IN THIS CHAPTER

5.1 Letter Case 159
5.2 Character Substitution 160
5.3 Prefix/Suffix Code 172
5.4 Code ID 173
5.5 Length Code 180
5.6 Multi-Barcode Editor 188
5.7 Removal of Special Character 192
5.8 AIM Code ID 192

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

Update

5.2 CHARACTER SUBSTITUTION

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

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

Key Type		Key Status
Scan Code	Only 1 scan code value is allowed. Refer to 5.2.1 Select a Set for 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 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 SELECT A SET FOR CHARACTER SUBSTITUTION

Configure Set 1

Configure Set 2

Configure Set 3

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

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

2) Read the "Hexadecimal Value" barcode on page 238 for the desired character substitution. For example,

KEY TYPE = NORMAL

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

KEY TYPE = SCAN CODE

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

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

KEY TYPE = NORMAL + KEY STATUS = SHIFT

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

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

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

Update

5.2.2 SYMBOLOGIES FOR CHARACTER SUBSTITUTION (ALL 3 SETS)

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

Character Substitution for Codabar

***Apply**

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

Do Not Apply

Character Substitution for EAN-13 (No Addon)

*Apply

Do Not Apply

Character Substitution for EAN-13 Addon 2

*Apply

Do Not Apply

Character Substitution for EAN-13 Addon 5

*Apply

Do Not Apply

Character Substitution for Italian Pharmacode

*Apply

Do Not Apply

Enter Setup

Character Substitution for Industrial 25

*Apply

Do Not Apply

Character Substitution for Interleaved 25

*Apply

Do Not Apply

Character Substitution for Matrix 25

*Apply

Do Not Apply

Character Substitution for Chinese 25

*Apply

Do Not Apply

Character Substitution for MSI

*Apply

Do Not Apply

Update

Character Substitution for GS1 DataBar

***Apply**

Do Not Apply

Character Substitution for UPC-A (No Addon)

***Apply**

Do Not Apply

Character Substitution for UPC-A Addon 2

***Apply**

Do Not Apply

Character Substitution for UPC-A Addon 5

***Apply**

Do Not Apply

Character Substitution for UPC-E (No Addon)

***Apply**

Do Not Apply

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 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**

Do Not Apply

Character Substitution for Composite TLC-39

***Apply**

Do Not Apply

Character Substitution for US Postnet

***Apply**

Do Not Apply

Character Substitution for US Planet

***Apply**

Do Not Apply

Character Substitution for UK Postal

***Apply**

Do Not Apply

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

Update

5.3 PREFIX/SUFFIX CODE

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

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

Key Type		Key Status
Scan Code	Up to 4 scan code values are allowed.	N/A
Normal Key	Up to 8 character strings are allowed.	▸ Add Shift ▸ Add Left Ctrl ▸ Add Left Alt ▸ Add Right Ctrl ▸ Add Right Alt Refer to Keyboard Wedge Table.

Configure Prefix 101230

Configure Suffix 101231

1) Read the barcode above to apply prefix code or suffix code separately, and follow steps 2~3. (Max. 8 characters each)
2) Read the “Hexadecimal Value” barcode on page 238 for the desired character string. For example, read “2” and “B” for the scanner to prefix or suffix the character [+].
3) Read the “Validate” barcode to complete this setting.

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 that you can select one and make necessary changes on it.

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

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

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

5.4.1 SELECT PRE-DEFINED CODE ID

Apply Code ID Set 1

109961

Apply Code ID Set 2

109962

Apply Code ID Set 3

109963

Apply Code ID Set 4

109964

Apply Code ID Set 5

109965

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
QR Code	e	S	S	X	Q

Enter Setup

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 page 238 for the desired character string. For example, read "4" and "4" for applying the character [D] for Code ID.
3) Read the "Validate" barcode to complete this setting.

Configure Code ID for Codabar

101456

Configure Code ID for Code 39

101450

Configure Code ID for Trioptic Code 39

102566

Configure Code ID for Code 93

101457

Configure Code ID for Code 128

101458

Configure Code ID for ISBT 128

101466

Configure Code ID for EAN-8

101460

Configure Code ID for EAN-13

101461

Configure Code ID for Italian Pharmacode

101451

Configure Code ID for Industrial 25

101453

Enter Setup

Configure Code ID for Interleaved 25

101454

Configure Code ID for Matrix 25

101455

Configure Code ID for Chinese 25

102571

Configure Code ID for MSI

101463

Configure Code ID for UPC-A

101462

Configure Code ID for UPC-E

101459

Configure Code ID for UCC Coupon Code

102565

Configure Code ID for Code 11

102567

Configure Code ID for Composite CC-A/B

102568

Configure Code ID for Composite CC-C

102569

Configure Code ID for Composite TLC-39

102570

Configure Code ID for US Postnet

102572

Update

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

Length Code for Codabar

Apply

101413

***Do Not Apply**

101412

Length Code for Code 39

Apply

101401

***Do Not Apply**

101400

Length Code for Trioptic Code 39

Apply

102505

***Do Not Apply**

102504

Length Code for Code 93

Apply

101415

***Do Not Apply**

101414

Enter Setup

Length Code for Code 128

Apply

***Do Not Apply**

Length Code for GS1-128 & GS1 DataBar

Apply

***Do Not Apply**

Length Code for ISBT 128

Apply

***Do Not Apply**

Length Code for EAN-8

Apply

***Do Not Apply**

Length Code for EAN-13

Apply

***Do Not Apply**

Update

Length Code for Italian Pharmacode

Apply

***Do Not Apply**

Length Code for Industrial 25

Apply

***Do Not Apply**

Length Code for Interleaved 25

Apply

***Do Not Apply**

Length Code for Matrix 25

Apply

***Do Not Apply**

Length Code for Chinese 25

Apply

***Do Not Apply**

Enter Setup

Length Code for MSI

Apply

***Do Not Apply**

Length Code for UPC-A

Apply

***Do Not Apply**

Length Code for UPC-E

Apply

***Do Not Apply**

Length Code for UCC Coupon Extended Code

Apply

***Do Not Apply**

Length Code for Code 11

Apply

***Do Not Apply**

Update

Length Code for 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

***Do Not Apply**

102518

Enter Setup

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

***Do Not Apply**

102528

Update

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

***Do Not Apply**

102538

Enter Setup

Length Code for QR Code

Apply

***Do Not Apply**

Length Code for MicroQR

Apply

***Do Not Apply**

Length Code for Aztec

Apply

***Do Not Apply**

Update

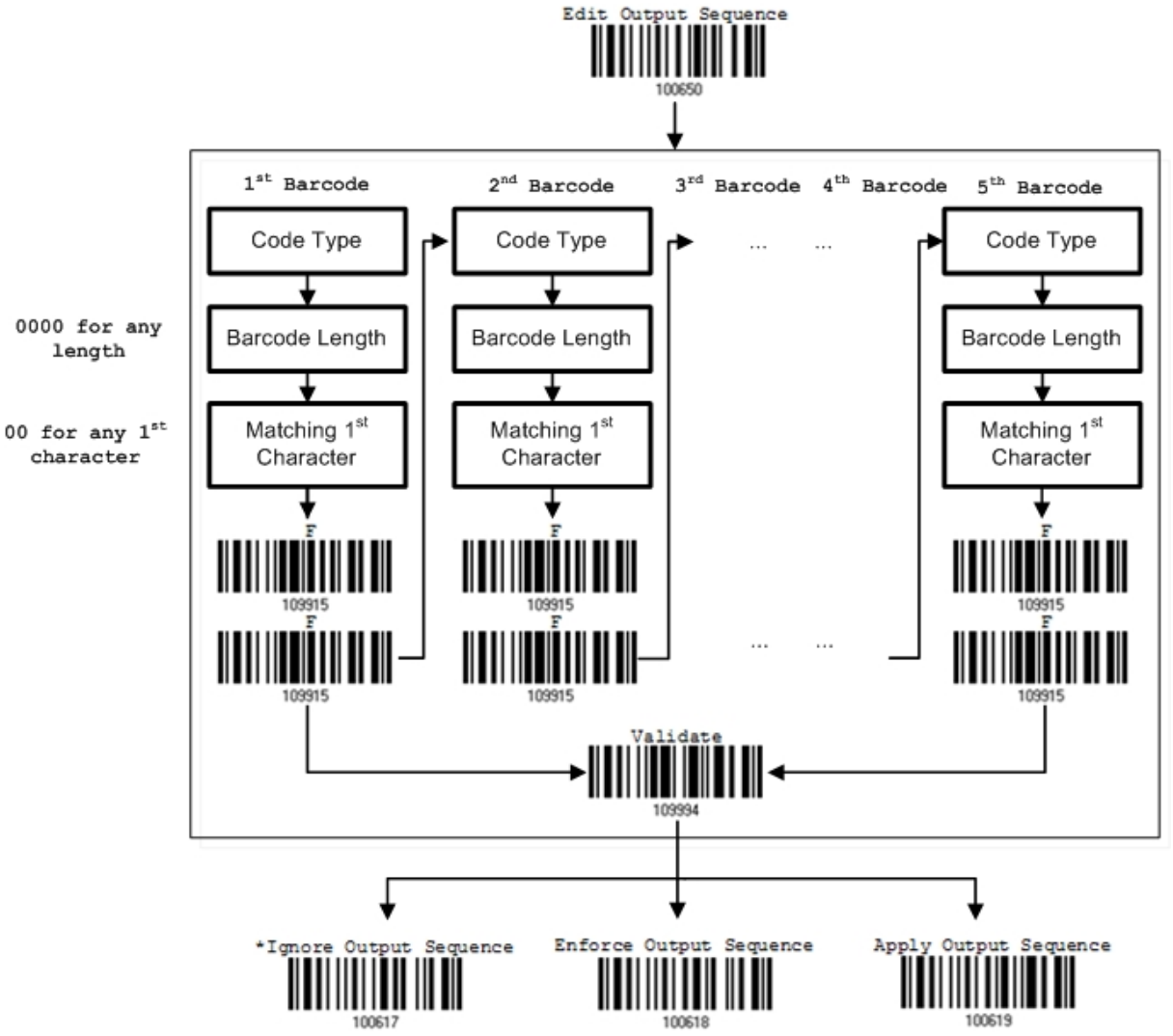
5.6 MULTI-BARCODE EDITOR

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

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

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

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



Enter Setup

5.6.1 EDIT A CONCATENATION OF BARCODES

Edit Output Sequence

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

2) Code Type setting – read the "Hexadecimal Value" barcode on page 238 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
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

Update

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 page 237 for the 4-digit length of the (first) barcode. For example, read "0065" for barcode length of 65 characters or read "0000" for any length.

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

4) Matching Character setting – read the "Hexadecimal Value" barcode on page 238 for the 1st character that must be found matching in the (first) barcode. For example, read "4" and "1" for matching character "A" as the first character in the barcode or read "00" for any character.

5) Read twice the "F" barcode on page 238 ("FF") to complete the setting of each barcode.

6) Read the "Validate" barcode to end the editing of the barcode set.

Enter Setup

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, the 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 the LED indicator will become solid green and go off quickly (= Good Read).

***Ignore Output Sequence**

Enforce Output Sequence

Apply Output Sequence

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.

Update

5.7 REMOVAL OF SPECIAL CHARACTER

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

Remove Special Character

1) Read the barcode above to remove the specified character.
2) Read the "Hexadecimal Value" barcode on page 238 for the desired character.

   For example, read "3" and "0" for the scanner to remove the character "0".
3) Read the "Validate" barcode to complete this setting.

5.8 AIM CODE ID

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

***Disable**

Enable

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 7KB after configuration. If the data length exceeds 7KB, 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	

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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

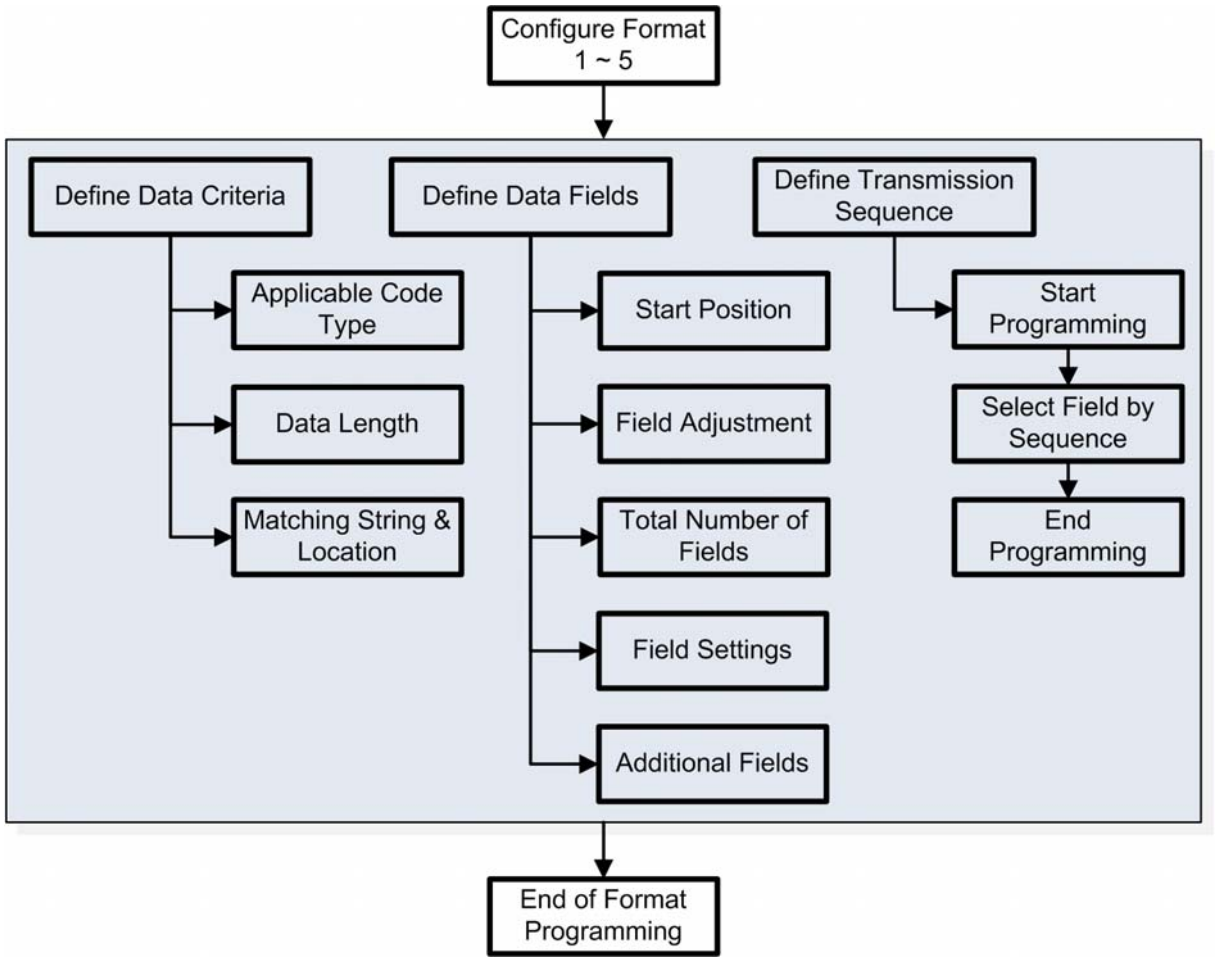
101201

***No**

101200

Update

6.2 HOW TO CONFIGURE EDITING FORMATS



End Programming Format

6.2.1 SELECT FORMAT TO CONFIGURE

Start Programming Format

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

- Up to five different formats can be specified.

Configure Format 1

Configure Format 2

Configure Format 3

Configure Format 4

Configure Format 5

Note: Before 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

Update

6.2.2 RESTORE DEFAULT FORMAT

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

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

Restore Default Format

End Programming Format

6.3 CONFIGURING FORMAT — DEFINE DATA CRITERIA

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

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

6.3.1 APPLICABLE CODE TYPE

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

Note: You must have at least one symbology selected.

***Apply to All**

Clear All

Update

Editing Format for Codabar

***Apply**

101513

Do Not Apply

101512

Editing Format for Code 39

***Apply**

101501

Do Not Apply

101500

Editing Format for Trioptic Code 39

***Apply**

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

End Programming Format

Editing Format for GS1-128 & GS1 DataBar

***Apply**

Do Not Apply

Editing Format for ISBT 128

***Apply**

Do Not Apply

Editing Format for EAN-8

***Apply**

Do Not Apply

Editing Format for EAN-8 Addon 2

***Apply**

Do Not Apply

Editing Format for EAN-8 Addon 5

***Apply**

Do Not Apply

Update

Editing Format for EAN-13

*Apply

101533

Do Not Apply

101532

Editing Format for EAN-13 Addon 2

*Apply

101535

Do Not Apply

101534

Editing Format for EAN-13 Addon 5

*Apply

101537

Do Not Apply

101536

Editing Format for Italian Pharmacode

*Apply

101503

Do Not Apply

101502

Editing Format for Industrial 25

*Apply

101507

Do Not Apply

101506

End Programming Format

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

Update

Editing Format for UPC-A Addon 2

***Apply**

101541

Do Not Apply

101540

Editing Format for UPC-A Addon 5

***Apply**

101543

Do Not Apply

101542

Editing Format for UPC-E

***Apply**

101521

Do Not Apply

101520

Editing Format for UPC-E Addon 2

***Apply**

101523

Do Not Apply

101522

Editing Format for UPC-E Addon 5

***Apply**

101525

Do Not Apply

101524

End Programming Format

Editing Format for UCC Coupon Extended Code

*Apply

101623

Do Not Apply

101622

Editing Format for Code 11

*Apply

101627

Do Not Apply

101626

Editing Format for Composite CC-A/B

*Apply

101629

Do Not Apply

101628

Editing Format for Composite CC-C

*Apply

101631

Do Not Apply

101630

Editing Format for Composite TLC-39

*Apply

101633

Do Not Apply

101632

Update

Editing Format for US Postnet

***Apply**

Do Not Apply

Editing Format for US Planet

***Apply**

Do Not Apply

Editing Format for UK Postal

***Apply**

Do Not Apply

Editing Format for Japan Postal

***Apply**

Do Not Apply

Editing Format for Australian Postal

***Apply**

Do Not Apply

End Programming Format

Editing Format for Dutch Postal

***Apply**

Do Not Apply

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

***Apply**

Do Not Apply

Editing Format for UPU FICS Postal

***Apply**

Do Not Apply

Editing Format for PDF417

***Apply**

Do Not Apply

Editing Format for MicroPDF417

***Apply**

Do Not Apply

Update

Editing Format for Data Matrix

***Apply**

101657

Do Not Apply

101656

Editing Format for Maxicode

***Apply**

101659

Do Not Apply

101658

Editing Format for QR Code

***Apply**

101661

Do Not Apply

101660

Editing Format for MicroQR

***Apply**

101663

Do Not Apply

101662

Editing Format for Aztec

***Apply**

101665

Do Not Apply

101664

End Programming Format

6.3.2 DATA LENGTH

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

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

I) 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 page 237 for the desired length.

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

Update

6.3.3 MATCHING STRING & LOCATION

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

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

1) Read the barcode to specify a matching string.

Matching String…

2) Read the "Hexadecimal Value" barcode on page 238 for the desired character string.
3) Read the "Validate" barcode to complete this setting.
4) Read the barcode to specify the location of the matching string.

Location of Matching String…

5) Read the "Decimal Value" barcode on page 237 for the desired location.
6) Read the "Validate" barcode on the same page 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 page 237 for the desired field length.
3) Read the "Validate" barcode on the same page to complete this setting.

6.4.3 TOTAL NUMBER OF FIELDS

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

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

***One Field**

Two Fields

Three Fields

Four Fields

Five Fields

Six Fields

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

6.4.4 FIELD SETTINGS

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

By Terminating String

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

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

By Length

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

Field 1 Setting

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

Select Field Separator to Divide Field 1…

2. Read the "Hexadecimal Value" barcode on page 238 for the desired character string.
3. Read the "Validate" barcode to complete this setting.
4. Read the "Discard Separator" barcode if the field separator is not desired in the field.

***Include Separator**

Discard Separator

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

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

Divide Field 1 by Length

2. Read the "Decimal Value" barcode on page 237 for the desired field length.
3. Read the "Validate" barcode on the same page to complete this setting.

Update

Field 2 Setting

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

Select Field Separator to Divide Field 2…

2. Read the "Hexadecimal Value" barcode on page 238 for the desired character string.
3. Read the "Validate" barcode to complete this setting.
4. Read the "Discard Separator" barcode if the field separator is not desired in the field.

***Include Separator**

Discard Separator

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

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

Divide Field 2 by Length

2. Read the "Decimal Value" barcode on page 237 for the desired field length.
3. Read the "Validate" barcode on the same page to complete this setting.

End Programming Format

Field 3 Setting

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

Select Field Separator to Divide Field 3…

2. Read the "Hexadecimal Value" barcode on page 238 for the desired character string.
3. Read the "Validate" barcode to complete this setting.
4. Read the "Discard Separator" barcode if the field separator is not desired in the field.

***Include Separator**

Discard Separator

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

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

Divide Field 3 by Length

2. Read the "Decimal Value" barcode on page 237 for the desired field length.
3. Read the "Validate" barcode on the same page to complete this setting.

Update

Field 4 Setting

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

Select Field Separator to Divide Field 4…

2. Read the "Hexadecimal Value" barcode on page 238 for the desired character string.
3. Read the "Validate" barcode to complete this setting.
4. Read the "Discard Separator" barcode if the field separator is not desired in the field.

***Include Separator**

Discard Separator

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

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

Divide Field 4 by Length

2. Read the "Decimal Value" barcode on page 237 for the desired field length.
3. Read the "Validate" barcode on the same page to complete this setting.

End Programming Format

Field 5 Setting

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

Select Field Separator to Divide Field 5…

2. Read the "Hexadecimal Value" barcode on page 238 for the desired character string.
3. Read the "Validate" barcode to complete this setting.
4. Read the "Discard Separator" barcode if the field separator is not desired in the field.

***Include Separator**

Discard Separator

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

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

Divide Field 5 by Length

2. Read the "Decimal Value" barcode on page 237 for the desired field length.
3. Read the "Validate" barcode on the same page to complete this setting.

Update

Additional Fields

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

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

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

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

Additional Field 1… 101584

Additional Field 2… 101585

Additional Field 3… 101586

Additional Field 4… 101587

Additional Field 5… 101588

2. Read the “Hexadecimal Value” barcode on page 238 for the desired additional field.
3. Read the “Validate” barcode to complete this setting.

End Programming Format

6.4.5 PAUSE FIELD SETTING

Pause Field Time

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

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

1. Read the barcode above to specify the time interval for the Pause Field. (It is set to 1 by default.)
2. Read the "Decimal Value" barcode on page 237. For example, read "1" and "0" for setting the Pause Field Time to 10 seconds.
3. Read the "Validate" barcode on the same page to complete this setting.

Update

6.5 CONFIGURING FORMAT – DEFINE TRANSMISSION SEQUENCE

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

Note: Up to twelve fields can be assigned.

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

Start Programming…

101589

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

Field 1

109901

Field 2

109902

Field 3

109903

Field 4

109904

Field 5

109905

Field 6

109906

Additional Field 1

109907

End Programming Format

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…

Update

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.

End Programming Format

6.6.2 EXAMPLE II

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

Data in a barcode is encoded like this:

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

Data will be transmitted like this:

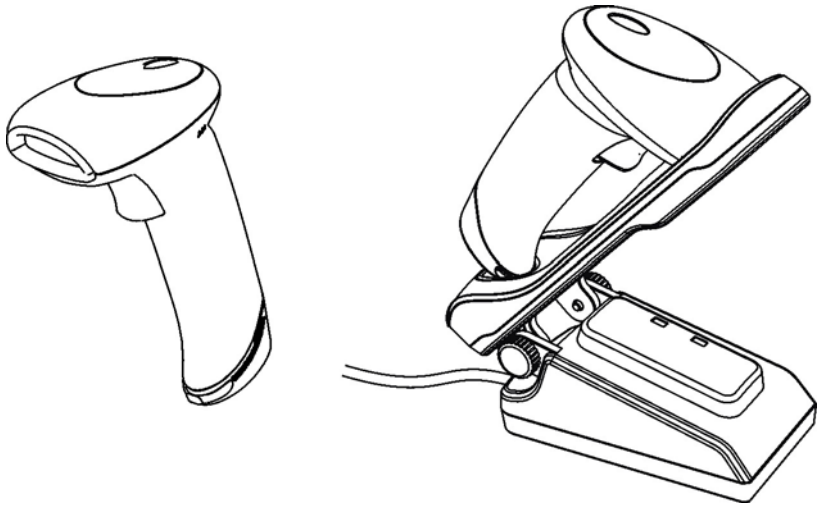
- The item number goes first, then a TAB character, followed by the date code, then another TAB character, and finally the quantity information.

The editing format should be configured as follows:

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

Update

SPECIFICATIONS



Optical Characteristics	Metapace S-22
Scan Engine	2D Imager
Light Source	Visible red LED
RF Characteristics	
WPAN Module	Wireless PAN BT Class 2 compliance
Coverage (line-of-sight)	90 meters with the cradle
Interface Supported	▸ Serial Port Profile (BT SPP) ▸ Human Interface Device Profile (BT HID) ▸ Keyboard Wedge, RS-232. USB Virtual COM or USB HID via the cradle
Physical Characteristics	
Memory	▸ 10 KB for transmit buffer ▸ 4 MB flash for memory mode
Switch	Tactile switch
Indication	Triple-color LED (Red/Green/Blue) and beeper
Weight	Approx. 185 g

Update

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

Note: The cradle is not only an Auto-Sense stand capable of charging the scanner, but specifically designed for the scanner to communicate with a host computer wirelessly.

Enter Setup

Appendix I

HOST SERIAL COMMANDS

SCANNER 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

"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"

EXAMPLE

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

- For the scanner to stop immediately –

  D

- For the scanner to resume working –

  E

- For the scanner to change the beeper to medium volume and beep –

  #@101011<CR>

  #@////<CR>

- For the scanner to change the beeper to minimal volume and beep –

  #@101010<CR>

  #@////<CR>

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

  #@101001<CR>

  #@////<CR>

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

  #@101008<CR>

  #@////<CR>

- For the scanner to save the settings, send the serial command "#@109999" –

  #@101011<CR>

  #@109999<CR>

Enter Setup

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

  #@RDSN<CR>

  #@////<CR>

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

CRADLE SETUP BARCODES & SERIAL COMMANDS

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

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

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

2) Connect the power supply cord from the cradle to a proper power outlet.

3) Refer to 3.1.1 Connect to the Cradle for the target scanner to connect to the cradle.

   Read the “Set Connection” barcode first, and then the “Serial Number” barcode. Both barcodes can be located at the back of the cradle.

4) Read the following barcodes in sequence to configure the cradle.

Enter Setup

(cradle-related setup barcodes)

Update

109999

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

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

Update

CRADLE SERIAL COMMANDS

Config<CR>

Purpose To configure the cradle.

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

SingleConnection<CR>

Purpose To allow only one scanner connecting to the cradle.

Here is the setup barcode for this serial command:

SingleConnection

MultiConnection<CR>

Purpose To allow up to seven scanners connecting to cradle.

Here is the setup barcode for this serial command:

MultiConnection

UseOnePortforAll<CR>

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

Here is the setup barcode for this serial command:

UseOnePortforAll

Enter Setup

UseVariablePort<CR>

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

Here is the setup barcode for this serial command:

UseVariablePort

Version<CR>

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

Here is the setup barcode for this serial command:

Version

GetID<CR>

Purpose To get MAC ID.

Here is the setup barcode for this serial command:

GetID

Download<CR>

Purpose To download CPU firmware to the cradle via RS-232 or USB.

Here is the setup barcode for this serial command:

Download

LoadBridge<CR>

Purpose To download USB Bridge firmware to the cradle via USB only.

Here is the setup barcode for this serial command:

LoadBridge

Update

EXAMPLE

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

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

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

2) Connect the power supply cord from the cradle to a proper power outlet.

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

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

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

Enter Setup

Appendix II

KEYBOARD WEDGE TABLE

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

	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									
	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	

Enter Setup

KEY TYPE & STATUS

KEY TYPE

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

***Normal**

Scan Code

KEY STATUS

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

Add Shift

Add Left Ctrl

Add Right Ctrl

Add Left Alt

Add Right Alt

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 page 238 for "2" and "1".
3. Read the "Validate" barcode to complete this setting.

KEY TYPE = SCAN CODE

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

1. Read the "Configure Prefix" barcode.
2. Read the "Scan Code" barcode.
3. Read the "Hexadecimal Value" barcode on page 238 for "1" and "C".
4. Read the "Validate" barcode to complete this setting.

KEY TYPE = NORMAL + KEY STATUS = SHIFT

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

1. Read the "Configure Prefix" barcode.
2. Read the "Add Shift" barcode.
3. Read the "Hexadecimal Value" barcode on page 238 for "3" and "1".
4. Read the "Validate" barcode to complete this setting.

KEY TYPE = NORMAL + KEY STATUS = CTRL

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

1. Read the "Configure Prefix" barcode.
2. Read the "Add Left Ctrl" barcode.
3. Read the "Hexadecimal Value" barcode on page 238 for "4", "1" (= "A").
4. Read the "Add Left Ctrl" barcode.
5. Read the "Hexadecimal Value" barcode on page 238 for "2", "4" (= "$").
6. Read the "Validate" barcode to complete this setting.

Enter Setup

Appendix III

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

Validate

109994

Update

Abort

HEXADECIMAL SYSTEM

Hexadecimal

0

109900

1

109901

2

109902

3

109903

4

109904

5

109905

6

109906

7

109907

8

109908

9

109909

A

109910

B

109911

C

109912

D

109913

E

109914

F

109915

Enter Setup

Validate the Values

Validate

109994

ASCII TABLE

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

Update

Abort

ENTERING PIN CODE FOR AUTHENTICATION

USE PRESET PIN

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

Use Preset PIN

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

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

Enter PIN in Hexadecimal…

Enter PIN in Decimal…

3) Read the “Decimal Value” barcode on page 237 or the “Hexadecimal Value” barcode on page 238 for the desired digits or character string.

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

Clear PIN Code

4) Read the “Validate” barcode to complete this setting.

Enter Setup

DISABLE AUTHENTICATION OR USE RANDOM PIN

In the configuration mode, read the barcode below to disable authentication (= No PIN) or use a random PIN for authentication.

***No PIN or use random PIN**

Note: When using BT HID, some device driver may not support pre-defined PIN code for authentication. In this case, make sure you have the scanner set to “No PIN or use random PIN” before pairing. While pairing, the host PIN code will be displayed on the computer screen.

Use Random PIN

When the target device is set to use a random PIN for authentication, wait until the random PIN is displayed on the target device while pairing, and then input the matching PIN code on the scanner.

Note: Follow the steps below to enter the matching PIN on the scanner. There is no need to enter the configuration mode!

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

Enter PIN in Hexadecimal…

Enter PIN in Decimal…

2. Read the “Decimal Value” barcode on page 237 or the “Hexadecimal Value” barcode on page 238 for the desired digits or character string.

   Read the “Clear PIN Code” barcode first if you need to re-input the PIN.

Clear PIN Code

3. Read the “Validate” barcode to complete this setting.

Reject Random PIN Request

When the random PIN is displayed on the target device while pairing, you can reject the PIN request by having the scanner read the “Validate” barcode.