

SOFTWARE MANUAL

VERSION 1.0



S-22

METAPACE

Copyright © 2013 EQUATOR LIMITED
All rights reserved.

All intellectual property rights are the property of their owners. EQUATOR LIMITED is authorized the right to use the software; it is provided under a license agreement containing restrictions on use and disclosure and is also protected by copyright law. Reverse engineering of the software is prohibited.

Due to continued product development this information may change without notice. The information and intellectual property contained herein is confidential between EQUATOR and the client and remains the exclusive property of EQUATOR LIMITED and other third party. If you find any problems in the documentation, please report them to us in writing. EQUATOR does not warrant that this document is error-free.

No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise without the prior written permission of EQUATOR LIMITED.

For product consultancy and technical support, please contact your local sales representative. Also, you may visit our web site for more information.

The EQUATOR logo is a registered trademark of EQUATOR LIMITED.

All brand, product and service, and trademark names are the property of their registered owners.

The editorial use of these names is for identification as well as to the benefit of the owners, with no intention of infringement.

EQUATOR LIMITED
Website: <http://www.metapace.com>

RELEASE NOTES

Version	Date	Notes
1.00	Sep. 23, 2013	Initial Release

CONTENTS

RELEASE NOTES	- 3 -
INTRODUCTION	1
Using Metapace Software	2
How to Configure the Scanner?	3
Setup Barcodes	4
Scanner Information	6
Menu Bar.....	7
File Menu	7
Configure Menu	7
Tools Menu	8
Help Menu.....	10
Toolbar	10
CHANGING SCANNER SETTINGS	11
1.1 Scanning Mode	12
1.1.1 Scanning Timeout.....	14
1.1.2 Continuous Mode Decode Delay	14
1.1.3 Aiming Timeout.....	14
1.1.4 Re-read Delay	15
1.1.5 Read Redundancy	15
1.1.6 Addon Security for UPC/EAN	15
1.2 Power Management.....	16
1.2.1 Auto Power Off	17
1.2.2 Power-Saving	17
1.2.3 Low Battery Alarm	17
1.3 Status Indicator.....	18
1.3.1 Beeper Volume	18
1.3.2 Good Read Beep.....	18
1.3.3 Good Read LED.....	18
1.4 "No Read" Support (Send "NR" to Host)	18
1.5 Read Negative Barcode.....	18
1.6 Auto Sense	19
1.7 Memory Mode	19
1.7.1 Data Delay.....	19
1.7.2 Send Data & Clear Memory	19
1.8 Effective Decoding Area	20
1.9 Transmit Buffer	20
1.10 Picklist Mode.....	20
1.11 Low Light Enhancement.....	21
1.12 2D Decode Settings.....	21
SELECTING OUTPUT INTERFACE	23
2.1 Keyboard Wedge.....	24

2.1.1 Keyboard Type	24
2.1.2 Alternate Composing.....	25
2.1.3 Alphabets Transmission.....	25
2.1.4 Digits Transmission	26
2.1.5 Capital Lock Type.....	27
2.1.6 Capital Lock State	27
2.1.7 Alphabets Layout	27
2.1.8 Digits Layout	29
2.1.9 Laptop Support	29
2.1.10 Inter-Function Delay.....	29
2.1.11 Inter-Character Delay	29
2.1.12 Sniff Mode (via Cradle)	29
2.1.13 Special Keyboard Feature	29
2.1.14 Kanji Transmission.....	30
2.2 RS-232.....	31
2.2.1 Baud Rate	31
2.2.2 Data Bits	31
2.2.3 Parity	32
2.2.4 Stop Bit.....	32
2.2.5 Flow Control	32
2.2.6 ACK/NAK Timeout	32
2.2.7 ACK/NAK Error Beep	32
2.2.8 Inter-Function Delay	32
2.2.9 Inter-Character Delay	33
2.2.10 Sniff Mode (via Cradle)	33
2.3 Bluetooth HID	34
2.3.1 Keyboard Type	34
2.3.2 Keyboard Settings	35
2.3.3 Inter-Function Delay	35
2.3.4 Inter-Character Delay	35
2.3.5 Authentication	35
2.3.6 Broadcasting.....	37
2.3.7 Sniff Mode.....	37
2.3.8 Character Transmit Mode	37
2.3.9 Kanji Transmission	37
2.3.10 Special Keyboard Feature	37
2.4 Bluetooth SPP Slave Mode.....	38
2.4.1 Authentication	38
2.4.2 Device Name Broadcasting	39
2.4.3 Sniff Mode.....	40
2.4.4 Inter-Function Delay	40
2.4.5 ACK/NAK Timeout	40
2.4.6 ACK/NAK Error Beep	40
2.5 Bluetooth SPP Master Mode	41
2.6 USB HID	43
2.7 USB Virtual COM	44
CHANGING SYMBOLOGY SETTINGS	45
3.1 Codabar	47
3.2 Code 25 – Industrial 25	48
3.3 Code 25 – Interleaved 25.....	49

3.4 Code 25 – Matrix 25	50
3.5 Code 39	51
3.6 Code 93	52
3.7 Code 128	52
3.8 EAN-8	53
3.9 EAN-13	54
3.10 GS1-128 (EAN-128)	55
3.11 ISBT 128	56
3.12 MSI	57
3.13 Italian Pharmacode	58
3.14 GS1 DataBar (RSS Family)	58
3.15 UPC-A	60
3.16 UPC-E	61
3.17 1D More	62
3.17.1 Chinese 25	62
3.17.2 Trioptic Code 39	62
3.17.3 Code 11	63
3.17.4 Coupon Code	64
3.17.5 Composite Code	65
3.17.6 Postal Code	66
3.18 2D Symbologies	67
DEFINING OUTPUT FORMAT	69
4.1 Letter Case	70
4.2 Character Substitution	71
4.2.1 Applicable Code Types	72
4.3 Prefix/Suffix Code	73
4.4 Code ID	74
4.4.1 Code ID Set 1~5	75
4.4.2 Change Code ID	76
4.4.3 Clear	76
4.5 Code Length	77
4.6 Output Sequence (Multi-Barcode Editor)	78
4.7 Remove Special Character	80
APPLYING EDITING FORMATS	81
5.1 Format Selection	82
5.1.1 Enable Editing Formats	82
5.1.2 Exclusive Data Editing	82
5.2 Configure Editing Format	83
5.2.1 Applicable Conditions	83
5.2.2 Field Settings	84
5.2.3 Transmission Sequence	86
5.2.4 Examples	87

GRID CONTROL	91
Original Grid Control	91
Special Grid Control for Keyboard Interface	92
Grid Control – Normal Key.....	92
Grid Control – Scan Code	93

INTRODUCTION

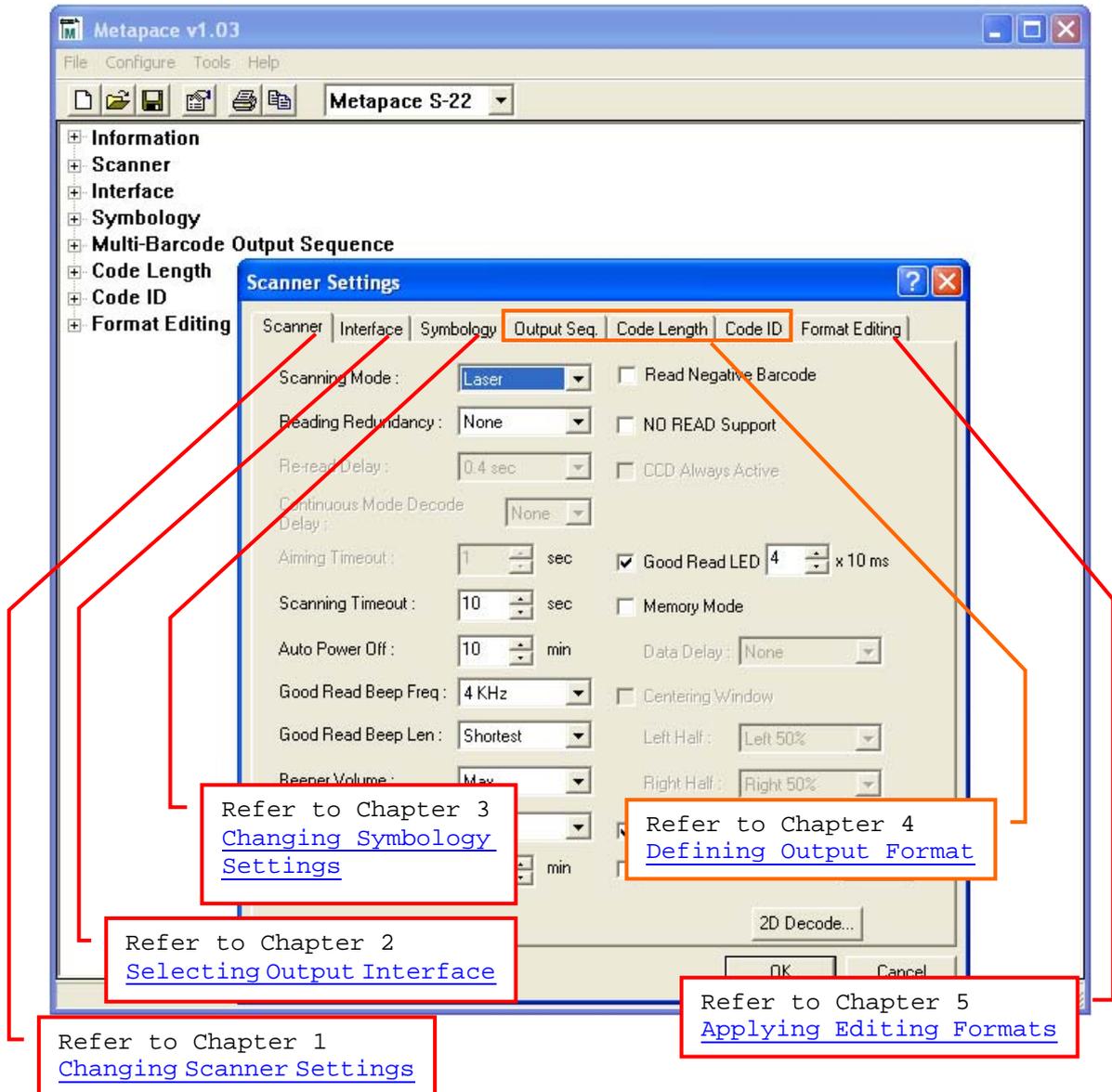
The software is a convenient utility that helps you configure the Metapace S-22 scanner. It provides two ways to change or update your scanner configuration – (1) download the new settings directly to the scanner, and (2) print out the setup barcodes that can be read by the scanner anytime anywhere, in order to load new settings or restore defaults.

This manual contains information on using the software. We recommend that you read it thoroughly before use and keep it at hand for quick reference.

Thank you for choosing our product!

USING METAPACE SOFTWARE

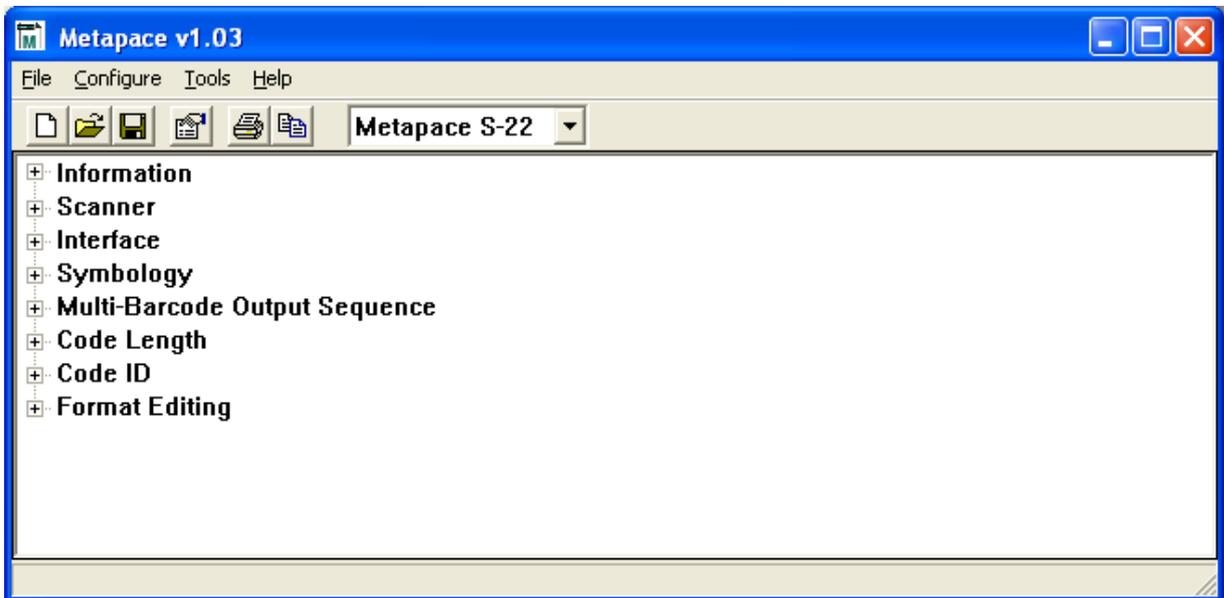
The Metapace software package includes two programs, **Metapace.exe** and **PrintBarcode.exe**, which can be used to configure the Metapace S-22 scanner. First, run **Metapace.exe** on your computer. You may configure its settings by (A) starting a new configuration, (B) opening an existing configuration file, or (C) reading configuration from a scanner. Then, download the current configuration to the rest of your Metapace S-22 scanners directly, or generate a file named *Barcode.prn* to keep a copy of the setup barcodes for the current configuration.



Note: If you wish to keep the Barcode.prn file, you must rename it; otherwise, it will be automatically overwritten as long as you choose to generate setup barcodes. Once you have a *.prn file, you can print the setup barcodes at any time by running PrintBarcode.exe.

HOW TO CONFIGURE THE SCANNER?

- 1) Run **Metapace.exe** on your computer.
- 2) If you are using **Metapace.exe** for the first time, click to expand the [Scanner Information](#) by category so that the default settings of the scanner can be viewed.



- 3) To create a new configuration file, click  or  on the toolbar.

To open an existing configuration file, click  on the toolbar.

To clone configuration from another scanner, click **Tools** | **Read Scanner Settings**. This scanner has to be connected to the host computer via RS-232 or Virtual COM (BT SPP or USB VCOM).

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

- 4) Proceed to configure the scanner. The data process is illustrated below.



1. The scanner will work with the settings specified on the Scanner tab.
2. It will read barcodes only if their symbologies are enabled, and output data in the desired letter case as selected on the Symbology tab.
3. It will check one by one whether the read barcode meets the criteria set out for a concatenation of barcodes on the Output Sequence tab.
4. It will perform character substitution as defined on the Format Editing tab.

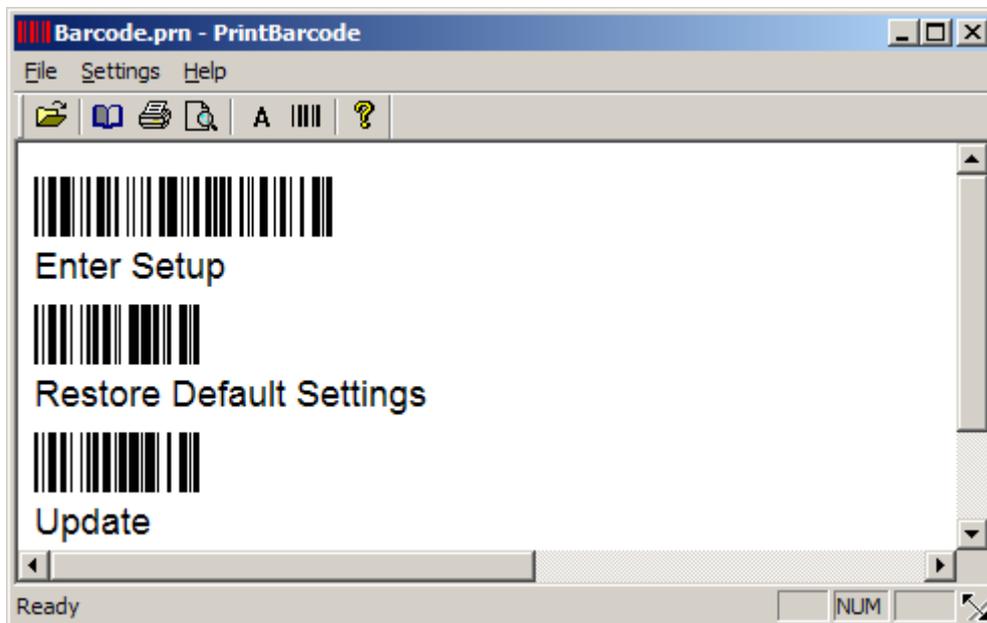
5. It will add 2-digit length code to desired symbologies as selected on the Code Length tab.
 6. It will add 1- or 2-character identifier to desired symbologies as selected on the Code ID tab.
 7. It will apply editing formats on desired symbologies that meet the criteria set out on the Format Editing tab.
 8. It will add prefix/suffix code to enabled symbologies as selected on the Symbology tab.
 9. Finally, it will output data via the desired interface.
- 5) If the scanner is connected to the host computer via RS-232 or Virtual COM (BT SPP or USB VCOM), you can directly download the settings. Otherwise, you can click  to print out setup barcodes and load settings to the scanner by reading setup barcodes.
-

Note: The program PrintBarcode.exe must be in the same folder where **Metapace.exe** is located.

- 6) When the scanner is configured successfully, connect it to the host computer via a proper interface: Keyboard wedge, RS-232, Bluetooth HID, Bluetooth SPP, USB HID, or USB Virtual COM.

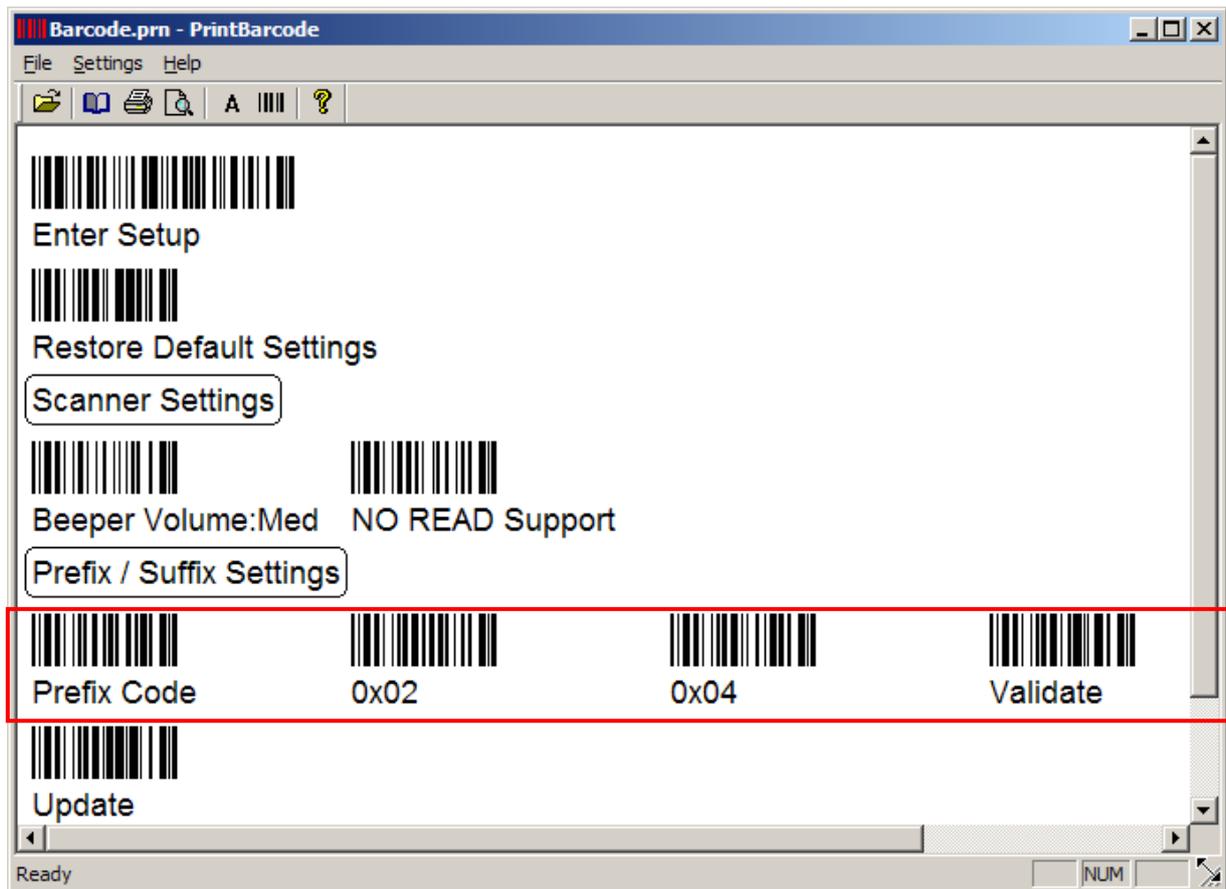
SETUP BARCODES

If you want to restore default settings, scan these barcodes one by one.



Setup Barcodes	Indication
<i>Enter Setup</i>	Scan this barcode to enter the configuration mode – <ul style="list-style-type: none"> ▶ it will respond with six beeps (high-low tone repeats three times), and ▶ the LED indicator will become flashing red
<i>Restore Default Settings</i>	Scan this barcode to restore the default settings. When the scanner has successfully read the barcode – <ul style="list-style-type: none"> ▶ it will respond with two beeps (low-high tone)
<i>Update</i>	Scan this barcode to confirm the updating – <ul style="list-style-type: none"> ▶ it will respond with six beeps (high-low tone repeats three times), and ▶ the LED indicator will go off. <p>When the scanner has successfully updated the settings, it will restart itself and respond with one long beep.</p>

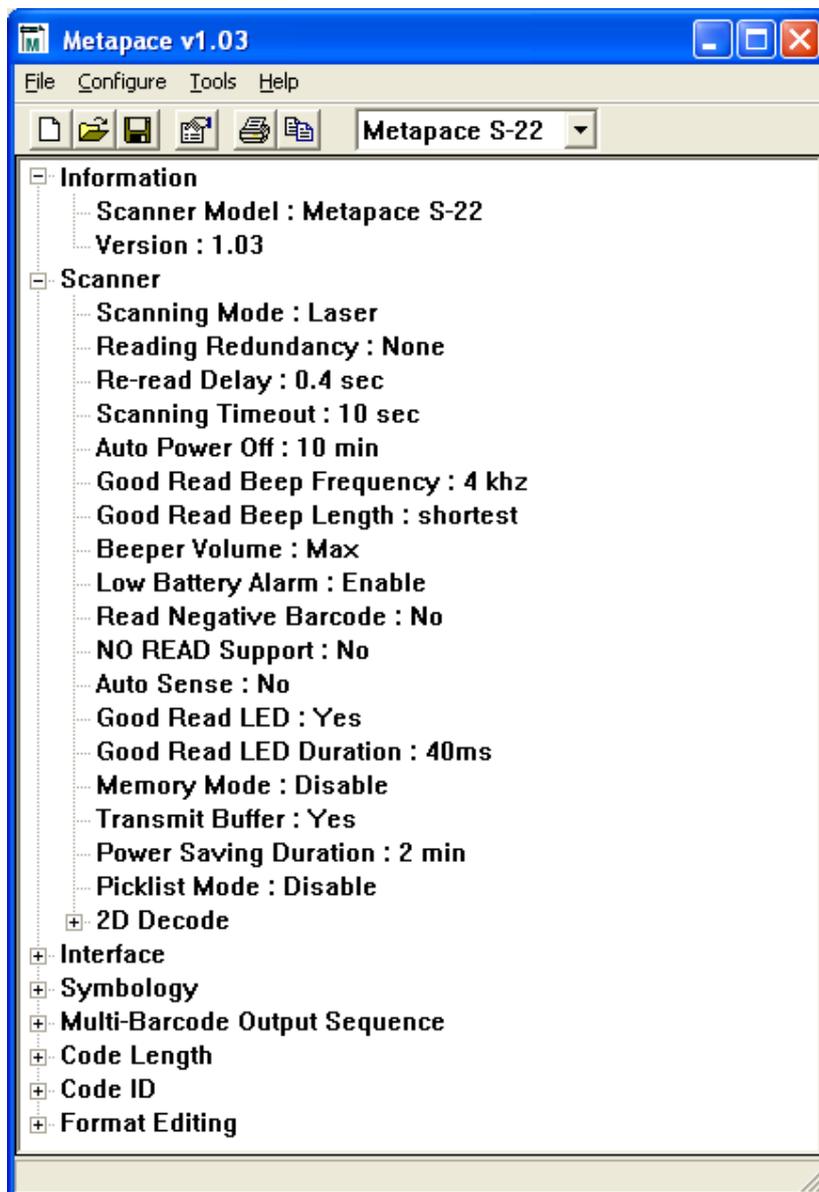
If you want to load new settings, scan associated barcodes. Take the screenshot below for example.



- ▶ You can always restore the default settings.
- ▶ The setup barcodes are categorized into groups of related settings, such as Scanner Settings, Prefix/Suffix Settings, Interface Settings, Code ID Settings, etc.
- ▶ After having made any changes to settings, you need to scan the "Update" barcodes to confirm such action. However, if a decimal or hexadecimal value is involved in the setting, you need to scan the "Validate" barcode before the "Update" barcode.

SCANNER INFORMATION

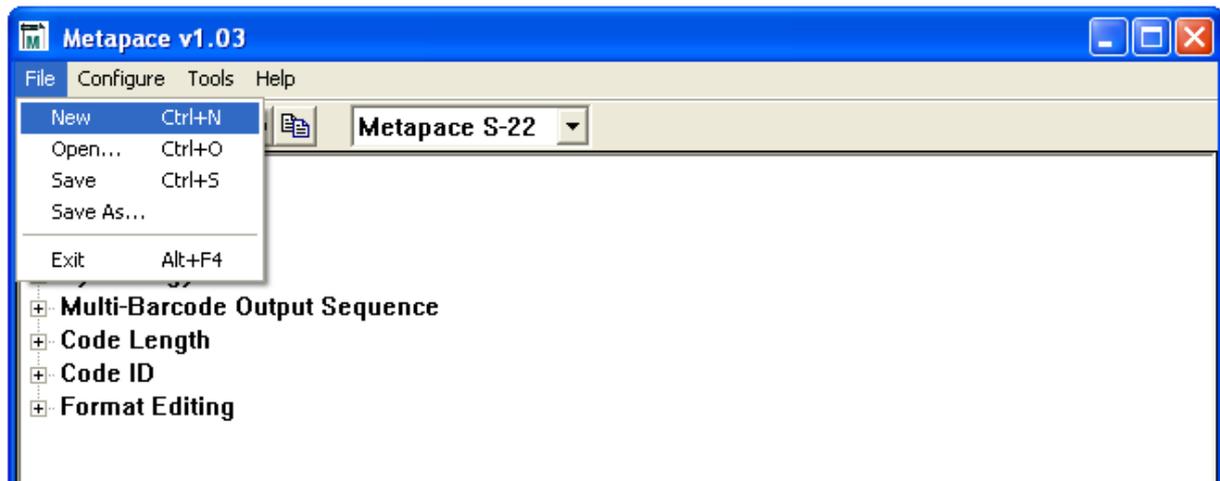
After selecting the scanner, click to expand the scanner information by category so that the default settings of the scanner can be viewed. If you open an existing configuration file or change the current settings, they will be updated accordingly.



MENU BAR

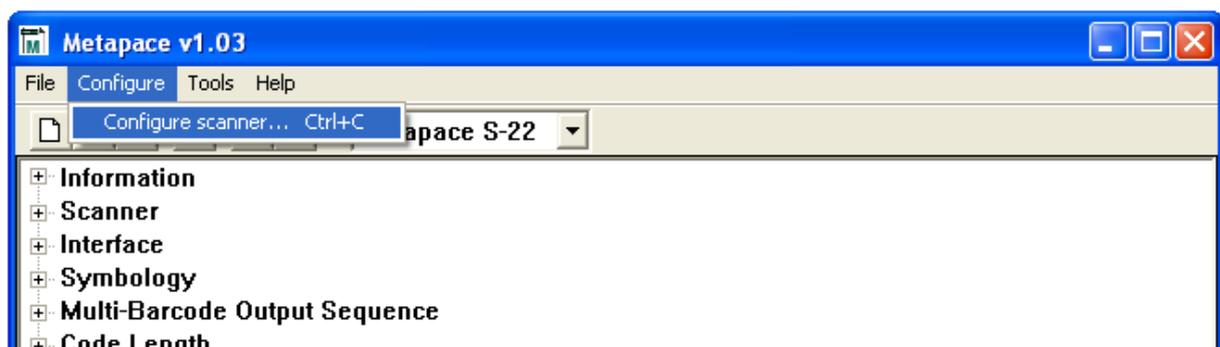
The menu bar contains a number of menus that specify which task you want the system to perform. Each menu contains a list of commands. Some of the options carry out commands immediately, and others display a window so that you can enter additional information. If an option is followed by [...], it will display a window. Otherwise, the command is carried out immediately.

FILE MENU



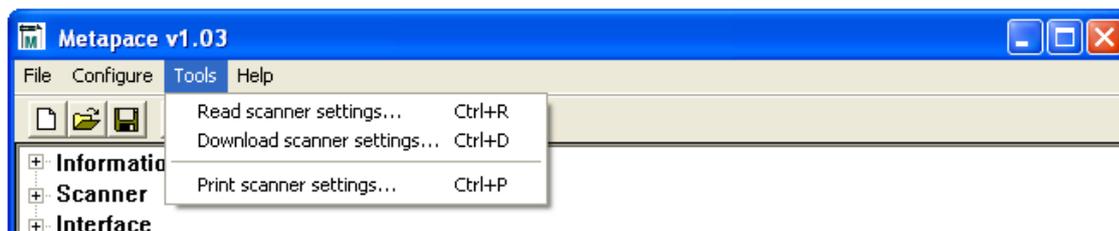
Command	To Do...
<i>New</i>	To create a new configuration file.
<i>Open</i>	To open an existing configuration file. File path needs to be specified.
<i>Save</i>	To save the current settings.
<i>Save As</i>	To save the current settings to a new configuration file.
<i>Exit</i>	To close the program.

CONFIGURE MENU

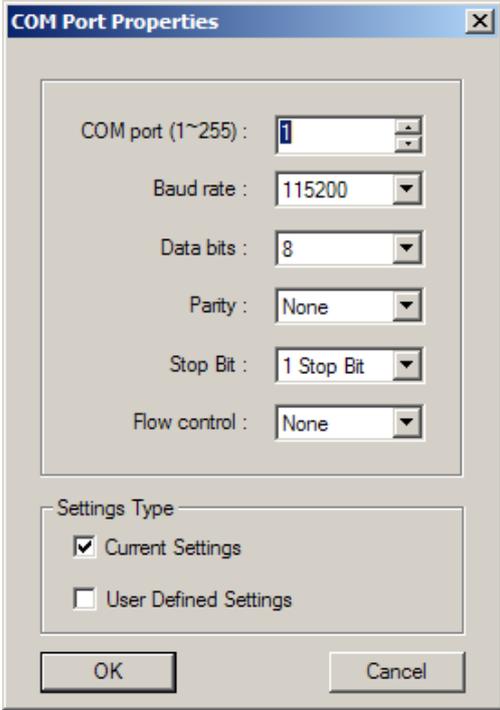


Command	To Do...
<i>Configure Scanner</i>	<p>Configure the current settings for the target scanner.</p> <p>Refer to the following sections –</p> <ul style="list-style-type: none"> ▶ Chapter 1 – Changing Scanner Settings ▶ Chapter 2 – Selecting Output Interface ▶ Chapter 3 – Changing Symbology Settings ▶ Chapter 4 – Defining Output Format ▶ Chapter 5 – Applying Editing Formats

TOOLS MENU

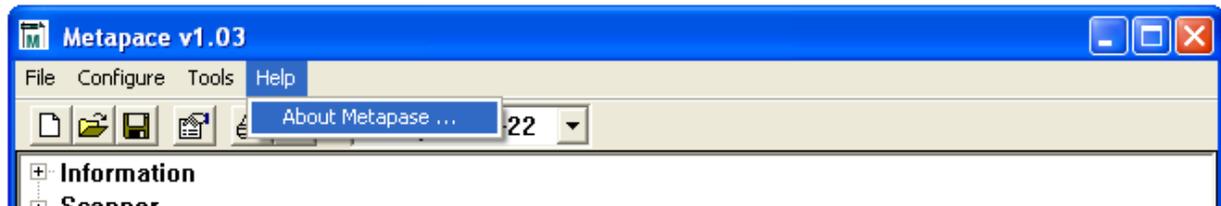


Command	To Do...
<i>Read Scanner Settings</i>	<p>Display [COM Port Properties] dialog box that enables users to fetch the settings applied on the scanner at the moment. It also supports to fetch user's defined settings (= "User Defaults").</p> <div data-bbox="424 1128 922 1839" data-label="Image"> </div> <ul style="list-style-type: none"> ▶ A dialog box pops up for configuring the COM port properties on your PC. For Bluetooth SPP or USB Virtual COM, specify the COM port for connection and ignore the other settings.

<p><i>Download Scanner Settings</i></p>	<p>Display the [COM Port Properties] dialog box that enable users to send the settings made in the Utility to the target scanner when the scanner is connected to your PC via RS-232 or Virtual COM (Bluetooth SPP or USB VCOM). It also supports you to send the settings to the scanner as "User Defaults".</p>  <p>▶ The [COM Port Properties] dialog box provides the access to set the COM port properties on your PC. For Bluetooth SPP or USB Virtual COM, specify COM port for connection and ignore the other settings.</p>
<p><i>Print Scanner Settings</i></p>	<p>Run PrintBarcode.exe to print out the Setup Barcodes, which will be automatically saved in the Barcode.prn file.</p> <p>If the scanner is not connected to the host computer via RS-232 or Virtual COM (BT SPP or USB VCOM), scanner configuration can be changed by scanning the setup barcodes.</p> <p>▶ The setup barcodes are categorized into groups of related settings.</p>

Note: To clone settings, first read settings from a specific scanner, and then download these settings to other scanners.

HELP MENU



Command	To Do...
<i>About</i>	Provide version information of the software.
<i>Metapace...</i>	

TOOLBAR

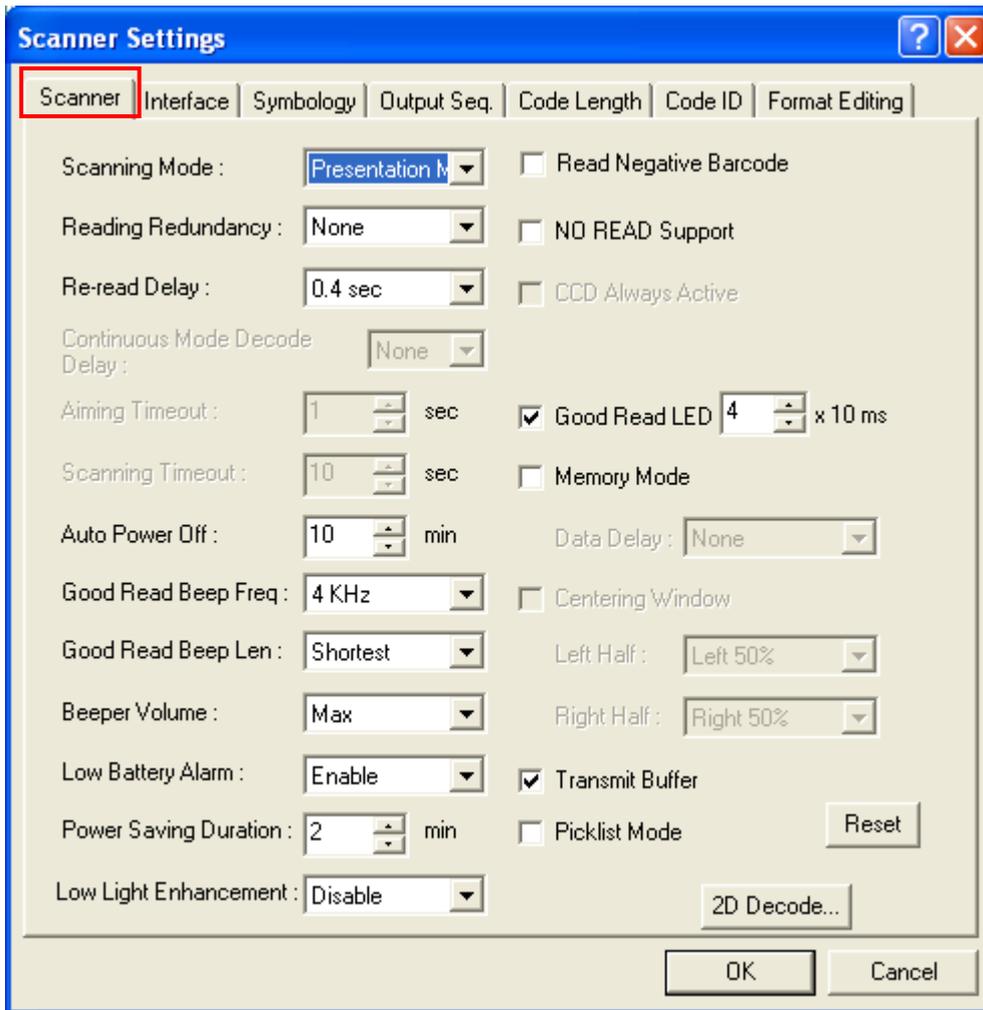
The toolbar allows quick access to most commands.



From left to right, the icons stand for the following commands:	
	▶ New
	▶ Open
	▶ Save
	▶ Configure
	▶ Print
	▶ Download Settings
	▶ Drop-down menu for scanner selection

CHANGING SCANNER SETTINGS

You may configure scanner settings of the target scanner.



IN THIS CHAPTER

1.1 Scanning Mode	12
1.2 Power Management	16
1.3 Status Indicator	18
1.4 "No Read" Support (Send "NR" to Host)	18
1.5 Read Negative Barcode	18
1.6 Auto Sense	19
1.7 Memory Mode.....	19
1.8 Effective Decoding Area	20
1.9 Transmit Buffer.....	20
1.10 Picklist Mode.....	20
1.11 Low Light Enhancement	21
1.12 2D Decode Settings.....	21

1.1 SCANNING MODE

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			
	<i>Always</i>	<i>Press trigger once</i>	<i>Hold trigger</i>	<i>Press trigger twice</i>	<i>Release trigger</i>	<i>Press trigger once</i>	<i>Barcode being read</i>	<i>Timeout</i>
<i>Continuous mode</i>	✓							
<i>Test mode</i>	✓							
<i>Laser mode</i>			✓		✓		✓	✓
<i>Auto Off mode</i>		✓					✓	✓
<i>Auto Power Off mode</i>		✓						✓
<i>Aiming mode</i>				✓			✓	✓
<i>Multi-Barcode mode</i>			✓		✓			
<i>Alternate mode</i>		✓				✓		
<i>Presentation mode</i>	✓							

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

Continuous Mode

The scanner is always scanning.

- ▶ To decode the same barcode repeatedly, move away the scan beam and target it at the barcode for each scanning.

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

Test Mode

The scanner is always scanning.

- ▶ Capable of decoding the same barcode repeatedly, for testing purpose.

Laser Mode

The scanner will start scanning once the trigger is hold 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".

Auto Off Mode

The scanner will start scanning once the trigger is pressed.

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

Note: Refer to "Scanning Timeout".

Auto 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".

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, (2) the pre-set timeout expires, or (3) you release the trigger.

Note: Refer to "Aiming Timeout".

Multi-Barcode Mode

The scanner will be scanning as long as the trigger is held down, capable of decoding not only one single barcode but a concatenation of unique barcodes.

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

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.

Alternate Mode

The scanner will start scanning once the trigger is pressed.

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

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.

1.1.1 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

1.1.2 CONTINUOUS MODE DECODE DELAY

Set the time interval between each decoding when in Continuous Mode.

1.1.3 AIMING TIMEOUT

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

1.1.4 RE-READ DELAY

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 —

- ▶ Continuous mode
- ▶ Auto Power Off mode
- ▶ Alternate mode
- ▶ Presentation Mode

1.1.5 READ REDUNDANCY

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 "Three Times" is selected, it will take a total of four consecutive successful decodings of the same barcode to make the reading valid. The higher the reading security is (that is, the more redundancy the user selects), the slower the reading speed gets.

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

1.1.6 ADDON SECURITY FOR UPC/EAN

This option is available on the Symbology tab. You may like to enforce read redundancy (1~30 times; 0= disable) on UPC/EAN barcodes with addons only.

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

1.2 POWER MANAGEMENT

The scanner will stay active at power-on, which may be followed by a transition from full CPU speed to low CPU speed ([1.2.2 Power-Saving](#)) to auto shutdown([1.2.1 Auto Power Off](#)).

Before establishing a WPAN connection successfully...

1. The scanner will stay active for a specified period of time (2 minutes by default) for the following scenarios. Its CPU is running at full speed, and the LED is flashing blue (On/Off ratio 0.5 s: 0.5 s).
 - (a) waiting for a connection request from the host (Bluetooth SPP Slave Mode)
 - (b) trying to connect to the host (Bluetooth HID or SPP Master Mode)
 - (c) trying to connect to the cradle
2. If it fails to connect within 2 minutes, the scanner will become inactive to save power for the remaining period of time (the specified value minus 2 minutes). Its CPU is running at low speed, and the LED is flashing red (On/Off ratio 0.3 s: 2.5 s).

Press the trigger to wake up the scanner when it becomes inactive, and the scanner will stay active again.
3. If it fails to connect again and again, and finally stays inactive until the specified time interval has elapsed, the scanner will automatically turn off in order to conserve battery power.

Hold down the trigger for about 2 seconds to turn it on. For scenarios (a) and (b) in step 1, on your computer you will have to search for the scanner again.

After establishing a WPAN connection successfully...

Once a WPAN connection is established successfully, the LED is solid blue. If the scanner is idle during the specified time interval for Auto Power Off, it will automatically turn off when the time is up. You will hear three short beeps, tone descending from high to low. For Bluetooth HID or SPP, there is no transition from full CPU speed to low CPU speed. However, when connecting to the cradle, the scanner will go through the transition in order to save power.

- ▶ For Bluetooth HID, the scanner will resume 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. 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" label.
- ▶ For Bluetooth SPP Slave Mode, the scanner must wait for the host to re-connect.
- ▶ For Bluetooth SPP Master Mode, the scanner will resume 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. 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" label.
- ▶ With the use of cradle, the scanner will try re-connecting to the cradle unless you turn off the scanner.

1.2.1 AUTO POWER OFF

Specify the time interval (1~254 min.; 0= disable) before the scanner automatically shuts down. By default, the scanner will stay active for 10 minutes for the said scenarios.

Note: Auto Power Off will not take effect when the scanner is in Auto-Sense mode and seated in the Auto-Sense Stand.

1.2.2 POWER-SAVING

Specify the time interval (1~254 min.; 0= disable) before the scanner enters low-speed mode for power-saving. By default, the scanner will stay active for 2 minutes for the said scenarios.

Note: Power-Saving will not take effect when one of the following conditions is met:

- (1) the scanner has already established a Bluetooth HID/SPP connection,
- (2) the scan mode is set to Test, Continuous or Alternate Mode,
- (3) the scanner is in Auto-Sense mode and seated in the Auto-Sense Stand, or
- (4) the setting value of Power-Saving is greater than that of Auto Power Off.

1.2.3 LOW BATTERY ALARM

By default, the low battery alarm is enabled. When the battery level drops below 3.4 V, the scanner will respond with a warning beep.

1.3 STATUS INDICATOR

1.3.1 BEEPER VOLUME

Beeeping is used to indicate various kinds of conditions, such as Good Read, buffer full status, configuration status, etc. Select a suitable volume.

1.3.2 GOOD READ BEEP

Good Read Beep is always enabled. By default, beeper frequency is set to 4 KHz and duration is set to shortest. Select a different frequency and duration if necessary.

1.3.3 GOOD READ LED

By default, Good Read LED is enabled and its duration is set to 40 milliseconds. When reading a barcode successfully, the LED on the scanner will become solid green and go off quickly. Enter a value, ranging from 1 to 254, in units of 10 milliseconds.

1.4 "NO READ" SUPPORT (SEND "NR" TO HOST)

The scanner will send the "NR" string to the host to notify the No Read event.

1.5 READ NEGATIVE BARCODE

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.

1.6 AUTO SENSE

When the scanner is seated in the cradle, press the trigger so that it will automatically enter Auto-Sense mode. In Auto-Sense mode, it will force the scanner to apply Laser mode as the scan mode. However, it works differently from the original Laser mode. Now the scanner will be scanning as long as it is seated in the cradle, as shown below. Whenever a barcode is brought within range, the scanner will be able to decode it.

When the ambient light is too dim to activate the sensor, you may change the sensitivity from "Normal" to "High" to improve performance.

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 (1) the power supply cord and (2) the interface cable to the Auto-Sense Stand.

1.7 MEMORY MODE

By default, memory mode is disabled. When the scanner is set to memory mode, it means a WPAN connection is disabled.

- ▶ The scanner keeps flash memory of 4 MB for memory mode operation.

1.7.1 DATA DELAY

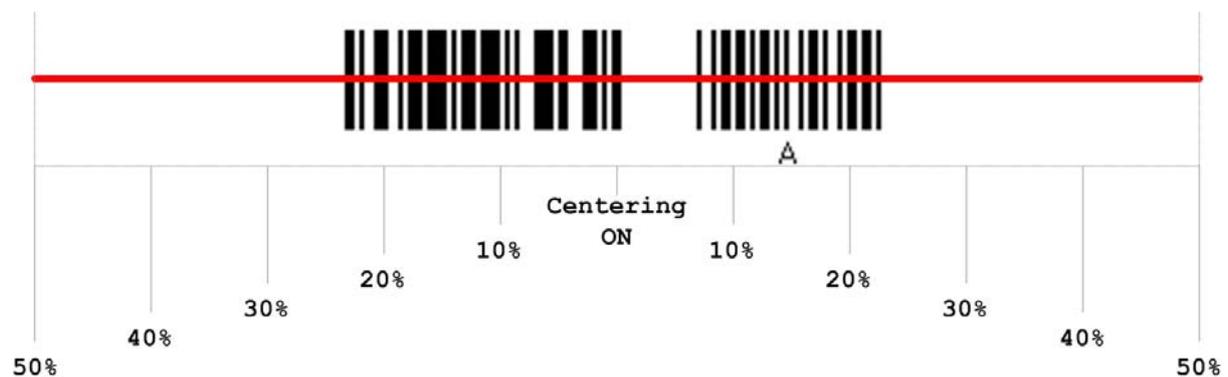
You may set a delay between each data record while transmitting data back to the server.

1.7.2 SEND DATA & CLEAR MEMORY

When flash memory is run out, the scanner will respond with two short beeps (high-low tone) as a warning. You are advised to send data to the server immediately by having the scanner read the setup barcodes. The scanner will resume the previous WPAN connection with the host computer temporarily. Refer to a separate manual.

1.8 EFFECTIVE DECODING AREA

By default, the effective decoding area is 100% covered by the scanned area. However, you may narrow down the decoding area to prevent reading the wrong barcode when a number of barcodes are printed closely. The scanner will only read barcodes that appear in the effective decoding area. Select the check box of "Centering Window" and select the percentage to narrow down the decoding area. For example, read "Left 10%" and then "Right 30%" for the scanner to decode barcode "A" only.



1.9 TRANSMIT BUFFER

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

- ▶ The scanner comes with 10 KB transmit buffer. It can ignore the transmission status and keep on reading barcodes until the buffer is full.

Transmit Buffer Enabled

- ▶ When transmit buffer is enabled and the scanner is out of range, the scanner 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.

Transmit Buffer Disabled

- ▶ When transmit buffer is disabled and the scanner is out of range, the scanner will respond with one long beep (low tone). You are advised to get back to range.

1.10 PICKLIST MODE

Picklist Mode is deselected by default. Select it to enable the scanner to decode only the barcodes aligned at the centre under the laser aiming pattern.

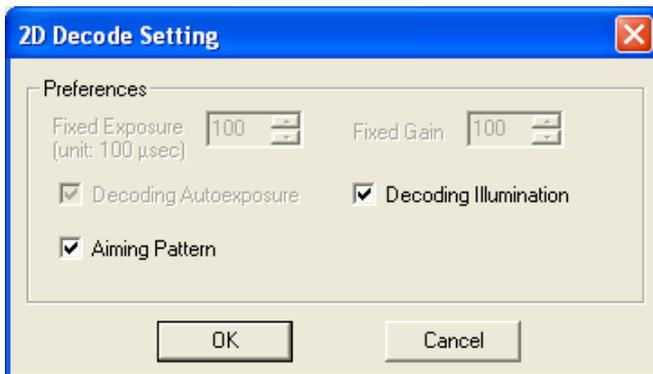
1.11 LOW LIGHT ENHANCEMENT

This option is available only when Presentation Mode is selected for **Scanning Mode**.

Disable is the default. Select **Enable** to maintain low-power illumination in low light conditions

1.12 2D DECODE SETTINGS

Click the 2D Decode... button to bring up the 2D Decode Setting dialog box for the S-22 scanner.



Fixed Exposure

“Decoding Autoexposure” is selected (enabled) and is unavailable. Thus, the Fixed Exposure time isn’t available.

Fixed Gain

“Decoding Autoexposure” is selected (enabled), and isn’t subject to change. Thus, the “Fixed Gain” isn’t available.

Decoding Autoexposure

Decide whether to manually specify the gain and exposure time. This item is not available.

Decoding illumination

Decide whether to cause the decoder to flash illumination on every image capture to aid decoding.

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

Aiming Pattern

Decide whether to allow the decoder to project the aiming pattern during a barcode capture.

SELECTING OUTPUT INTERFACE

By default, the output interface is set to “Bluetooth HID”. In order to establish a proper connection between your computer and the scanner, we suggest that you follow these instructions –

- 1) Install batteries and hold down the trigger for about 2 seconds to turn on the scanner.
- 2) Turn on your computer or laptop and establish a WPAN connection with the scanner

It also allows connecting the RS-232 or Keyboard Wedge cable via the cradle.

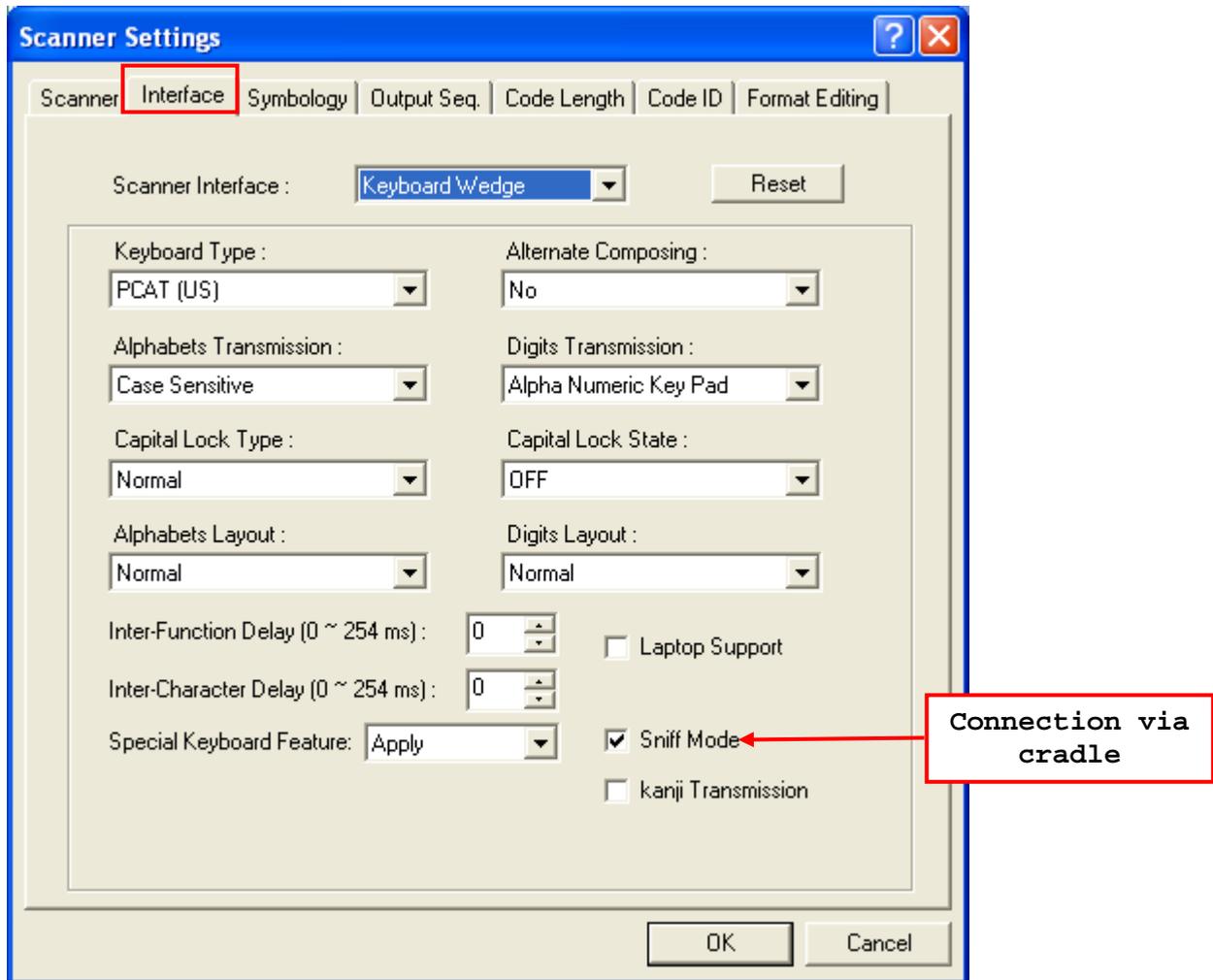
Note: If using the RS-232 cable, join the power supply cord.

IN THIS CHAPTER

2.1 Keyboard Wedge.....	24
2.2 RS-232.....	31
2.3 Bluetooth HID	34
2.4 Bluetooth SPP Slave Mode	38
2.5 Bluetooth SPP Master Mode	41
2.6 USB HID	43
2.7 USB Virtual COM.....	44

2.1 KEYBOARD WEDGE

Use the "Y-shaped" keyboard wedge cable to connect the cradle between the keyboard input port of the host computer and the keyboard. The scanned data will be transmitted to the host keyboard port as if it is manually entered via the keyboard.



2.1.1 KEYBOARD TYPE

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

No.	Keyboard Type	No.	Keyboard Type
1	PCAT (US)	16	PS55 001-2
2	PCAT (French)	17	PS55 001-82
3	PCAT (German)	18	PS55 001-3
4	PCAT (Italian)	19	PS55 001-8A

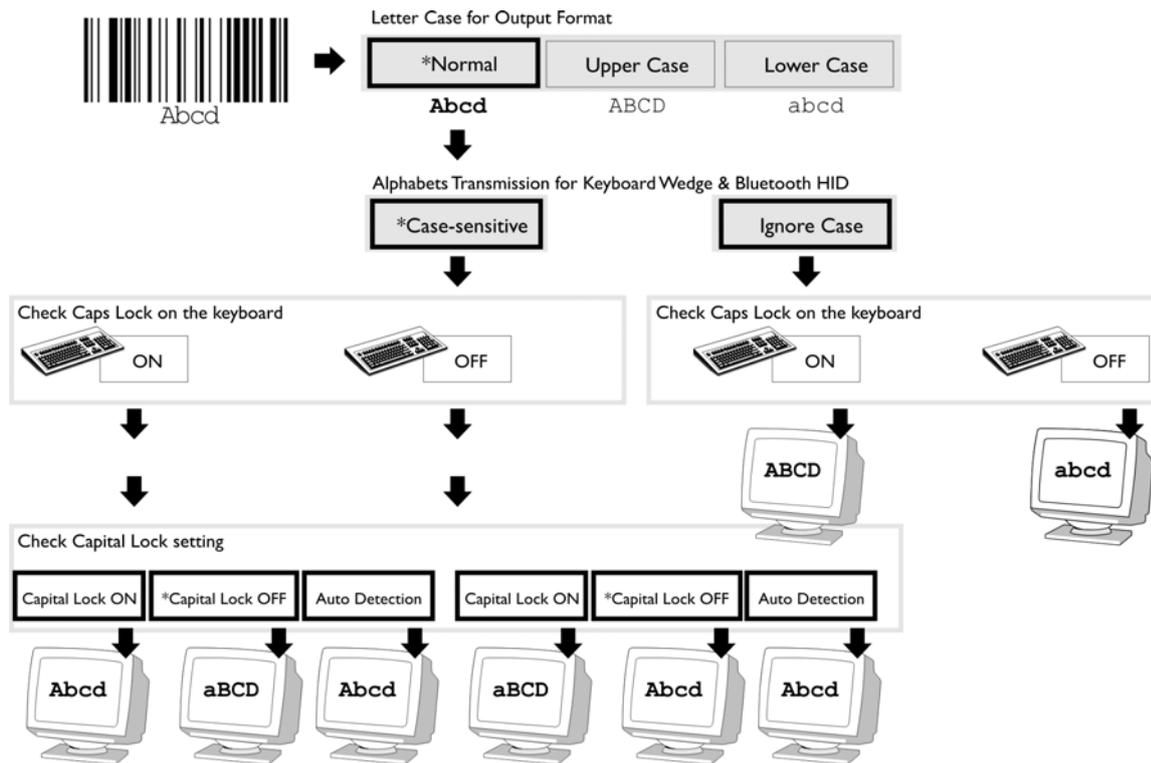
5	PCAT (Swedish)	20	PS55 002-1, 003-1
6	PCAT (Norwegian)	21	PS55 002-81, 003-81
7	PCAT (UK)	22	PS55 002-2, 003-2
8	PCAT (Belgium)	23	PS55 002-82, 003-82
9	PCAT (Spanish)	24	PS55 002-3, 003-3
10	PCAT (Portuguese)	25	PS55 002-8A, 003-8A
11	PS55 A01-1	26	IBM 3477 Type 4 (Japanese)
12	PS55 A01-2 (Japanese)	27	PS2-30
13	PS55 A01-3	28	IBM 34XX/319X, Memorex Telex 122 Keys
14	PS55 001-1	29	User-Defined Table
15	PS55 001-81	30	PCAT (Turkish)

2.1.2 ALTERNATE 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.

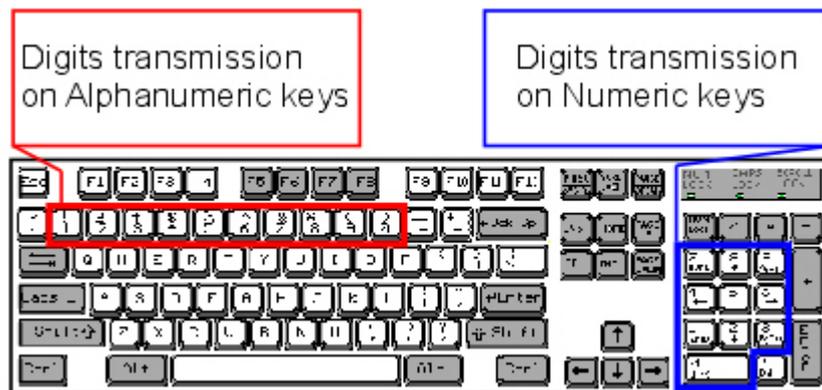
2.1.3 ALPHABETS TRANSMISSION

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.



2.1.4 DIGITS TRANSMISSION

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



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

2.1.5 CAPITAL LOCK TYPE

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

2.1.6 CAPITAL LOCK STATE

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.

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

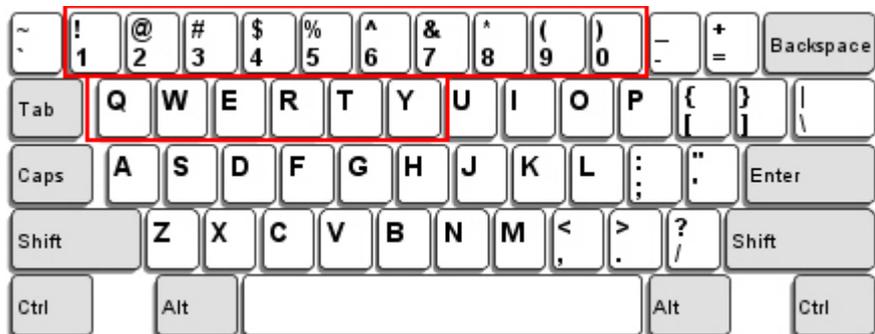
2.1.7 ALPHABETS LAYOUT

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.

US Keyboard Style – Normal

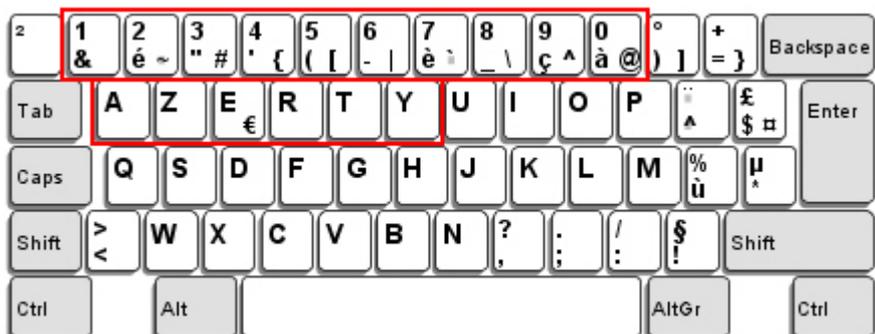
QWERTY layout, which is normally used in western countries.



► 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.

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.

2.1.8 DIGITS LAYOUT

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

Options	Description
<i>Normal</i>	Depends on the [Shift] key or [Shift Lock] setting
<i>Lower Row</i>	For QWERTY and QWERTZ keyboards
<i>Upper Row</i>	For AZERTY keyboards

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

2.1.9 LAPTOP SUPPORT

By default, laptop support is disabled. Select the check box if you connect the wedge cable to a laptop without an external keyboard being inter-connected.

2.1.10 INTER-FUNCTION DELAY

By default, the inter-function delay is set to zero. Enter 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.

2.1.11 INTER-CHARACTER DELAY

By default, the inter-character delay is set to zero. Enter 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.

2.1.12 SNIFF MODE (VIA CRADLE)

By default, this power-saving feature is enabled, meaning the scanner will listen to the wireless network at a reduced rate while connecting to the cradle.

2.1.13 SPECIAL KEYBOARD FEATURE

The characters from 0x01 through 0x0F bear special definitions on Keyboard Wedge Table. So a printed barcode contains any of the said characters is often wrongly decoded.

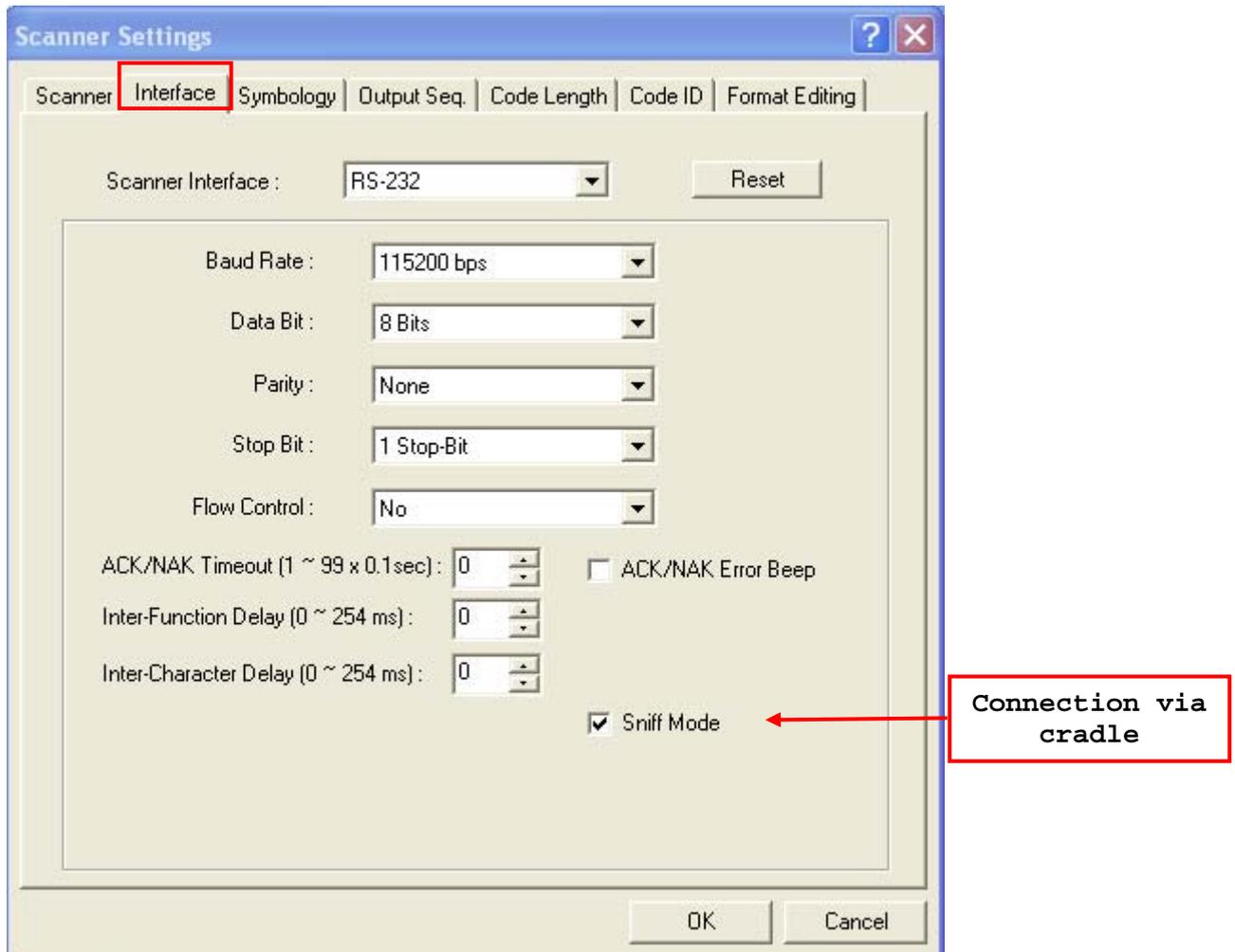
The **Special Keyboard Feature** fixes this problem. Leave it as **Apply**, the default, to nullify said definitions of characters to ensure error-free decoding; otherwise select **Bypass** when you are pretty much sure you don't have such concern.

2.1.14 KANJI TRANSMISSION

Kanji Transmission is deselected by default. Select it to enable the scanner to transmit the Japanese characters collected from 2D barcodes to a host computer that runs on Japanese Windows O.S.

2.2 RS-232

Connect the cradle to the serial port of the host computer using the RS-232 cable and join the power adaptor to the RS-232 connector. The associated RS-232 parameters must match those configured on the computer. The scanned data will be transmitted to the serial port.



2.2.1 BAUD RATE

By default, it is set 115200 bps for the baud rate setting. Select other value that matches your computer settings.

2.2.2 DATA BITS

By default, it is set 8 bits of data. Select 7 bits of data if necessary.

2.2.3 PARITY

By default, it is set no parity bit. Select other parity setting, even or odd parity bit.

2.2.4 STOP BIT

By default, it is set 1 stop bit. Select 2 stop bits if necessary.

2.2.5 FLOW CONTROL

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

Options	Description
<i>No</i>	No flow control
<i>Scanner Ready</i>	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.
<i>Data Ready</i>	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.
<i>Inverted Data Ready</i>	It works the same as the Data Ready flow control, except that the RTS signal level is inverted.

2.2.6 ACK/NAK TIMEOUT

By default, the scanner sends data to the host without waiting for an ACK/NAK response before sending more data. Enter 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 three more times. If all the attempts fail without any notification, data loss will occur.

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

2.2.7 ACK/NAK ERROR BEEP

By default, this function is disabled; we suggest enabling the error beep so that you will be notified of such data loss and have the scanner re-read data.

2.2.8 INTER-FUNCTION DELAY

By default, the inter-function delay is set to zero. Enter a value, ranging from 0 to 254 in units of millisecond, to match the computer response time of the RS-232 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.

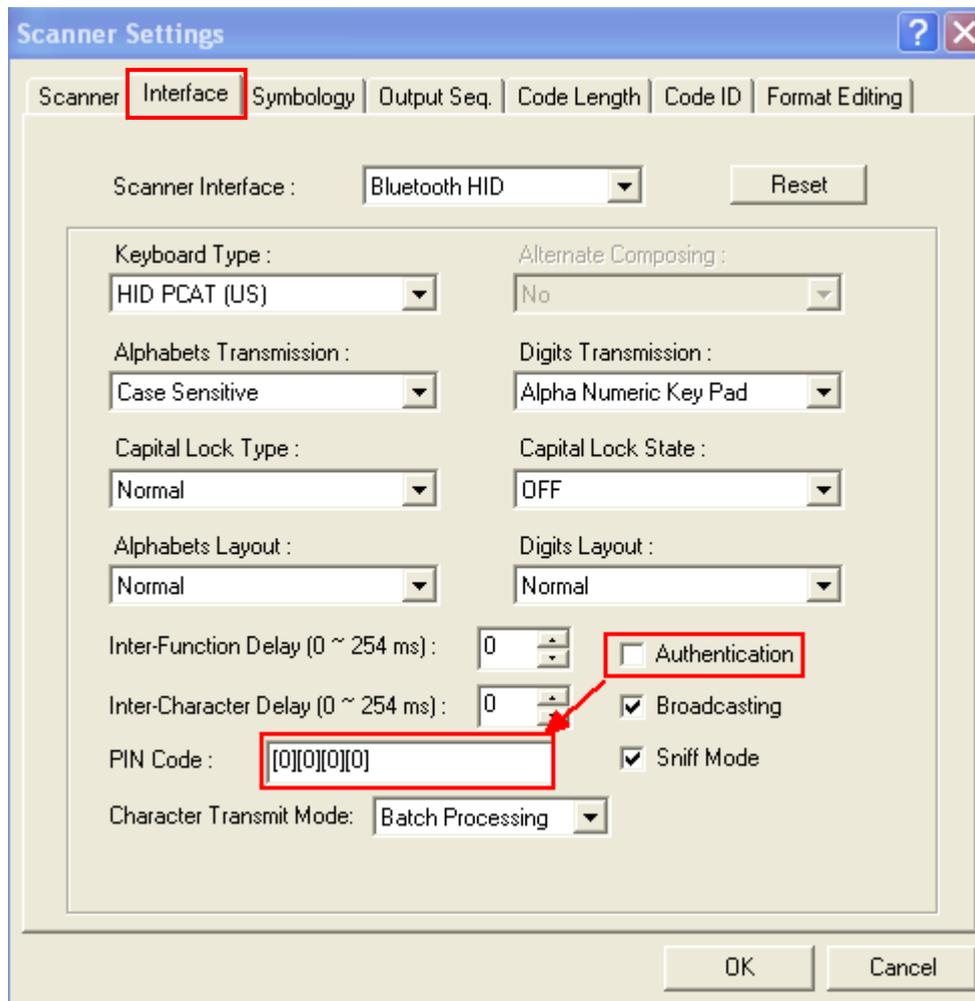
2.2.9 INTER-CHARACTER DELAY

By default, the inter-character delay is set to zero. Enter a value, ranging from 0 to 254 in units of millisecond, to match the computer response time of the RS-232 interface. Such delay time is inserted between every character being transmitted. The longer the delay time is, the slower the transmission speed will be.

2.2.10 SNIFF MODE (VIA CRADLE)

By default, this power-saving feature is enabled, meaning the scanner will listen to the wireless network at a reduced rate while connecting to the cradle.

2.3 BLUETOOTH HID



2.3.1 KEYBOARD TYPE

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

No.	Keyboard Type	No.	Keyboard Type
64	PCAT (US)	70	PCAT (UK)
65	PCAT (French)	71	PCAT (Belgium)
66	PCAT (German)	72	PCAT (Spanish)
67	PCAT (Italy)	73	PCAT (Portuguese)
68	PCAT (Swedish)	74	PS55 A01-2 (Japanese)
69	PCAT (Norwegian)	76	PCAT (Turkish)

2.3.2 KEYBOARD SETTINGS

Refer to [2.1 Keyboard Wedge](#). Please ignore Alphabets Layout and Alternate Composing for Bluetooth HID.

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

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

2.3.3 INTER-FUNCTION DELAY

By default, the inter-function delay is set to zero. Enter a value, ranging from 0 to 254, 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.

Value	Delay Time	Value	Delay Time
0	Disable	195 ~ 204	200 millisecond
1 ~ 14	10 millisecond	205 ~ 214	210 millisecond
15 ~ 24	20 millisecond	215 ~ 224	220 millisecond
25 ~ 34	30 millisecond	225 ~ 234	230 millisecond
35 ~ 44	40 millisecond	235 ~ 244	240 millisecond
45 ~ 54	50 millisecond	245 ~ 254	250 millisecond
...	...		

2.3.4 INTER-CHARACTER DELAY

By default, the inter-character delay is set to zero. Enter 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.

2.3.5 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

Select the check box of "Authentication", and enter exactly the same string in the "PIN Code" field as the preset PIN 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.

Authentication

PIN Code :

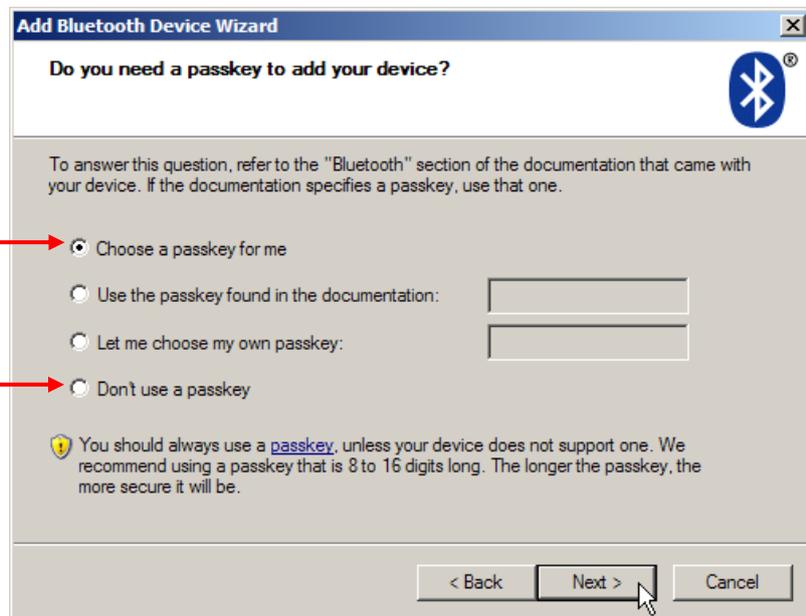
Enable Authentication with Random PIN or No Authentication

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.)

Authentication

Use random PIN

No PIN required



Note: When using Bluetooth HID, some device driver may not support pre-defined PIN code for authentication. In this case, make sure you cancel the check box of "Authentication" to 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.

2.3.6 BROADCASTING

The scanner can be configured to hide itself from other devices equipped with *Bluetooth*[®] wireless technology. Simply disable the device name broadcasting setting so that it won't be discovered by any other computer or PDA. However, broadcasting must be enabled for establishing an initial connection with the scanner.

For example, you can disable device name broadcasting after successfully connecting the scanner to WorkStation1. Such connection will be maintained automatically unless the scanner is removed from the paired device list (called unpairing) by WorkStation1 or any changes made to authentication and the PIN code. If you want WorkStation2 to connect to the scanner, you will have to enable device name broadcasting first.

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

2.3.7 SNIFF MODE

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

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

2.3.8 CHARACTER TRANSMIT MODE

By default, HID interface sends data to the host in batch. You may change it to process data one character at a time.

2.3.9 KANJI TRANSMISSION

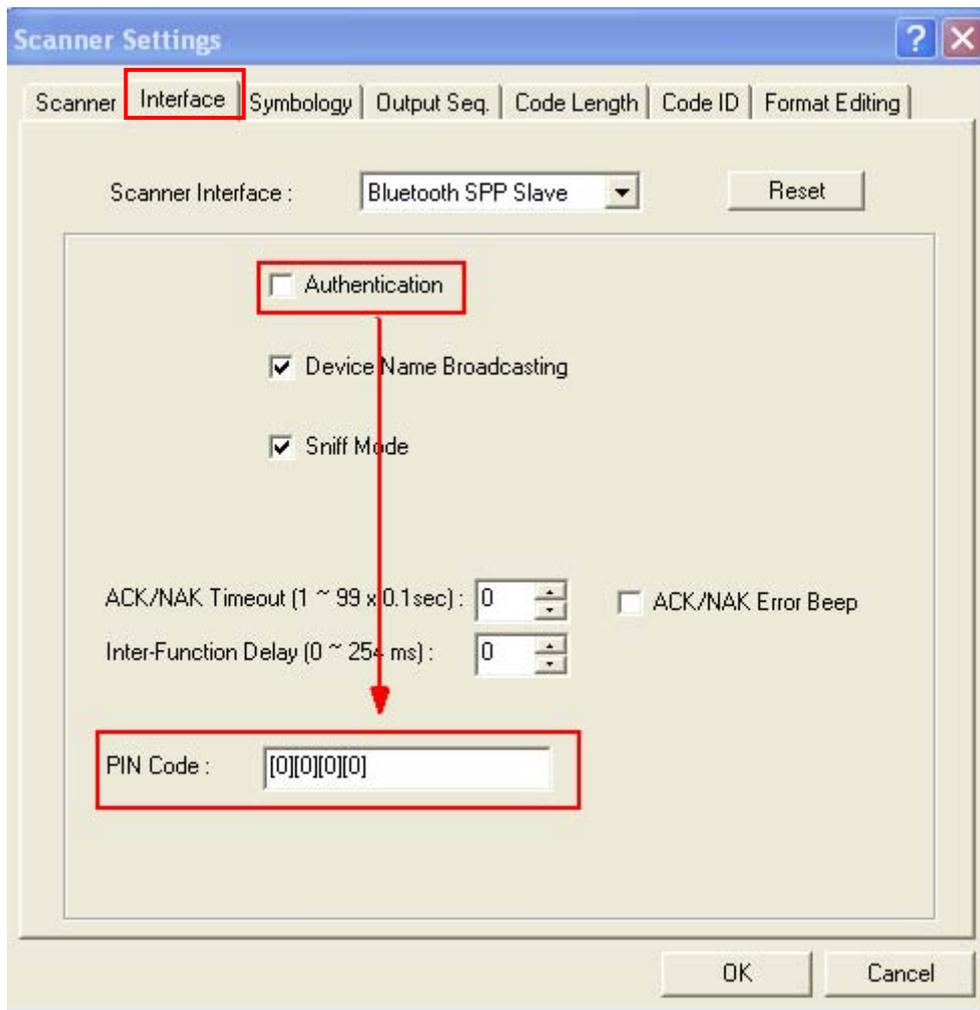
Kanji Transmission is deselected by default. Select it to enable the scanner to transmit the Japanese characters collected from 2D barcodes to a host computer that runs on Japanese Windows O.S.

2.3.10 SPECIAL KEYBOARD FEATURE

The characters from 0x01 through 0x0F bear special definitions on Keyboard Wedge Table. So a printed barcode contains any of the said characters is often wrongly decoded.

The **Special Keyboard Feature** fixes this problem. Leave it as **Apply**, the default, to nullify said definitions of characters to ensure error-free decoding; otherwise select **Bypass** when you are pretty much sure you don't have such concern.

2.4 BLUETOOTH SPP SLAVE MODE

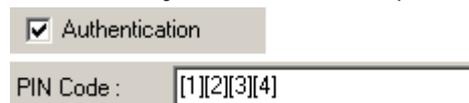


2.4.1 AUTHENTICATION

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:

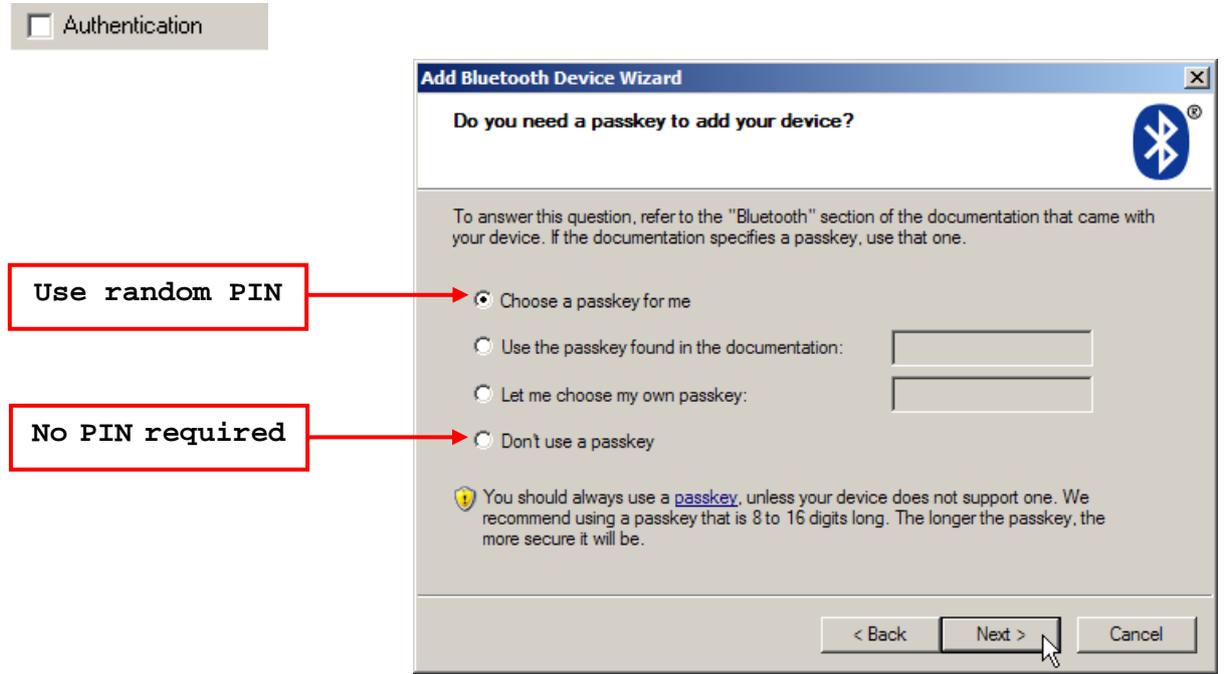
Enable Authentication with Preset PIN

Select the check box of "Authentication", and enter exactly the same string in the "PIN Code" field as the preset PIN 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.



Enable Authentication with Random PIN or No Authentication

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



Note: When using Bluetooth HID, some device driver may not support pre-defined PIN code for authentication. In this case, make sure you cancel the check box of “Authentication” to 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.

2.4.2 DEVICE NAME BROADCASTING

The scanner can be configured to hide itself from other devices equipped with *Bluetooth*[®] wireless technology. Simply disable the device name broadcasting setting so that it won't be discovered by any other computer or PDA. However, broadcasting must be enabled for establishing an initial connection with the scanner.

For example, you can disable device name broadcasting after successfully connecting the scanner to WorkStation1. Such connection will be maintained automatically unless the scanner is removed from the paired device list (called unpairing) by WorkStation1 or any changes made to authentication and the PIN code. If you want WorkStation2 to connect to the scanner, you will have to enable device name broadcasting first.

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

2.4.3 SNIFF MODE

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

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

2.4.4 INTER-FUNCTION DELAY

By default, the inter-function delay is set to zero. Enter a value, ranging from 0 to 254, to match the computer response time of the Bluetooth SPP 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.

Value	Delay Time	Value	Delay Time
0	Disable	195 ~ 204	200 millisecond
1 ~ 14	10 millisecond	205 ~ 214	210 millisecond
15 ~ 24	20 millisecond	215 ~ 224	220 millisecond
25 ~ 34	30 millisecond	225 ~ 234	230 millisecond
35 ~ 44	40 millisecond	235 ~ 244	240 millisecond
45 ~ 54	50 millisecond	245 ~ 254	250 millisecond
...	...		

2.4.5 ACK/NAK TIMEOUT

By default, the scanner sends data to the host without waiting for an ACK/NAK response before sending more data. Enter 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 three more times. If all the attempts fail without any notification, data loss will occur.

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

2.4.6 ACK/NAK ERROR BEEP

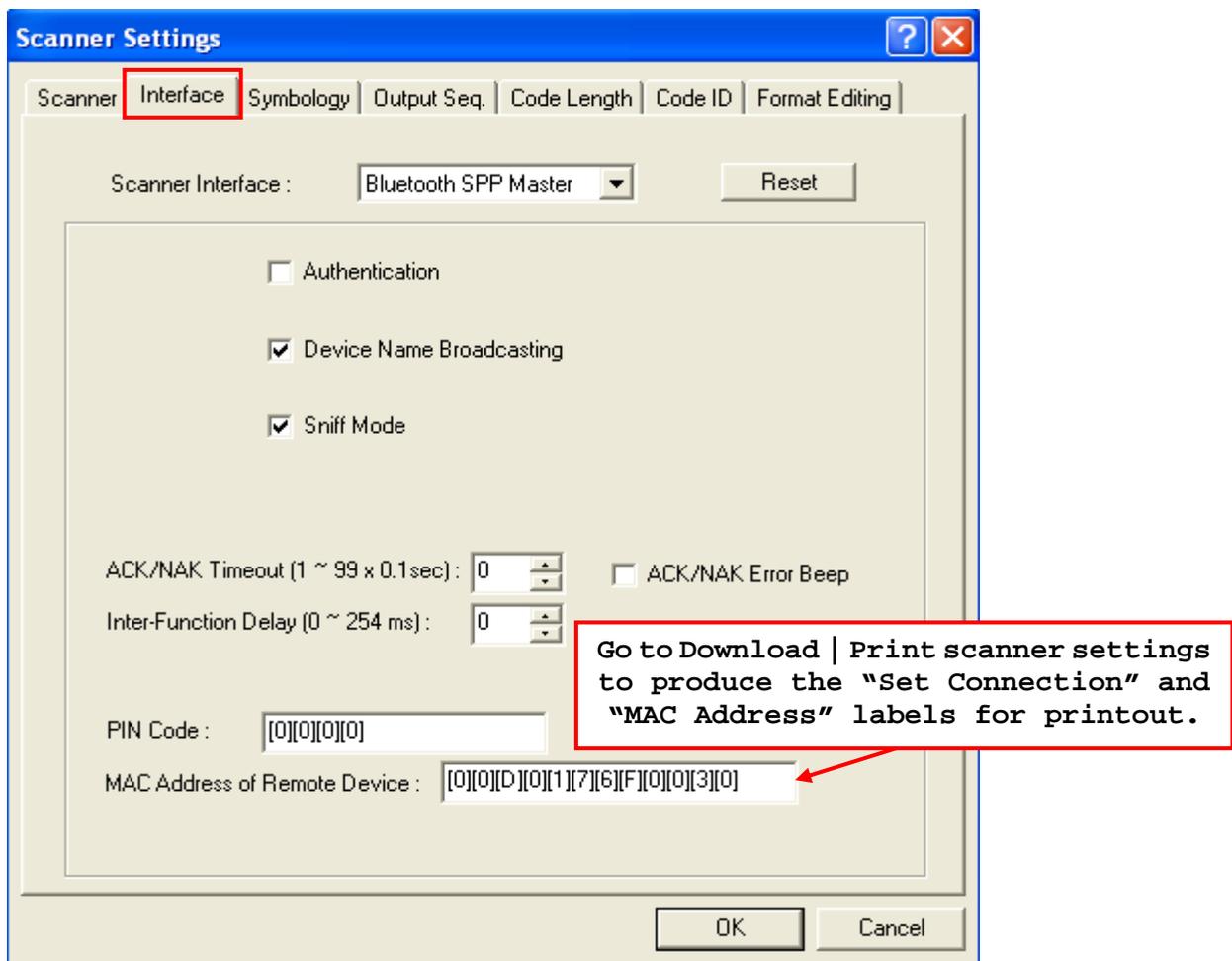
By default, this function is disabled; we suggest enabling the error beep so that you will be notified of such data loss and have the scanner re-read data.

2.5 BLUETOOTH SPP MASTER MODE

In this mode, re-connection is made easy and reliable, just like connecting with the cradle. That is, as a SPP master device, the scanner will resume 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. If the scanner fails to resume connection, it will try every 5 seconds to re-connect to the host unless you change the interface to Bluetooth SPP Slave and download settings to the scanner.

Note: One alternative to stopping re-connection is to have the scanner read the "Reset Connection" or "Restore System Defaults" label. Refer to a separate manual for instructions.

For the connection settings, refer to [2.4 Bluetooth SPP Slave Mode](#).



Note: In SPP Master Mode, if it fails to re-connect within the specified period of time (2 minutes by default), the scanner will become inactive to save power. Once the re-connection is established successfully, the scanner will not go through transition from full CPU speed to low CPU speed even though it is idle during the specified time interval for Auto Power Off. It will automatically turn off when the time is up. Refer to [1.2 Power Management](#).

How to connect with the target device?

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

- ▶ “Set Connection” label
- ▶ “MAC Address” label

Usage:

1. Change the interface to Bluetooth SPP Master and download settings to the scanner.
2. Click the field of “MAC Address of Remote Device” to choose characters from the pop-up window of Grid Control (see [Appendix I Grid Control](#)). It requires 12 characters.
3. Click [OK] to complete all the settings.
4. Go to **Download | Print scanner settings** to produce the “Set Connection” and “MAC Address” labels for printout.
5. Have the scanner read the “Set Connection” and “MAC Address” labels. It will respond with one beep upon reading each of the labels.

Note: (1) It will automatically add a prefix of “0x” to the real MAC address of the target device.
(2) Read the “Set Connection” label first, and then the “MAC Address” label within 10 seconds.

Switch between Master/Slave Mode

After the scanner has established a connection as a SPP slave device, change the interface to Bluetooth SPP Master and download settings to the scanner. It will work as a SPP master device then.

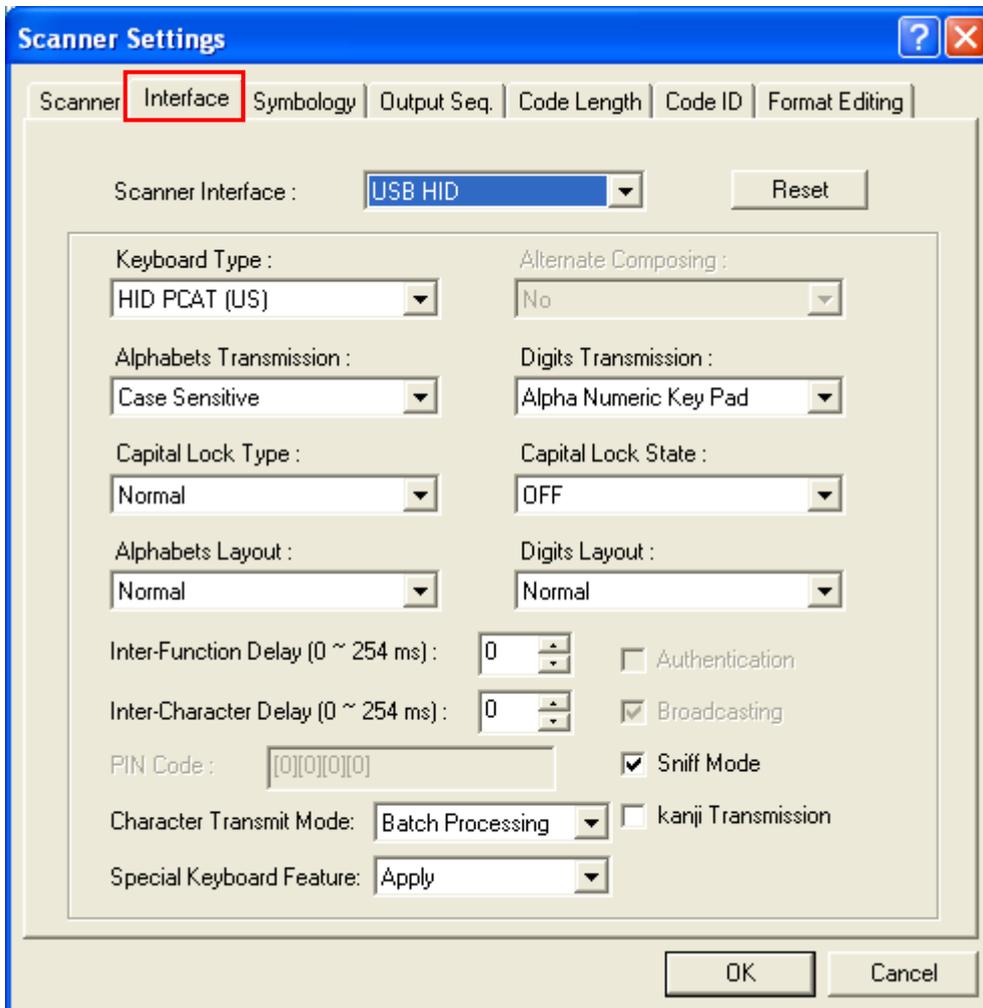
Note: Switching from SPP Slave to SPP Master does not require a new PIN code. You must leave it blank or enter exactly the same PIN code for SPP Slave; otherwise, it will fail to resume connection if a different PIN code is specified.

Exit SPP Master Mode

To stop re-connection, change the interface to Bluetooth SPP Slave and download settings to the scanner. Alternatively, you may have the scanner read “Reset Connection” or “Restore System Defaults” label so that the current connection record (= MAC Address) will be cleared. Then, the scanner will restart itself automatically. Refer to a separate manual for instructions.

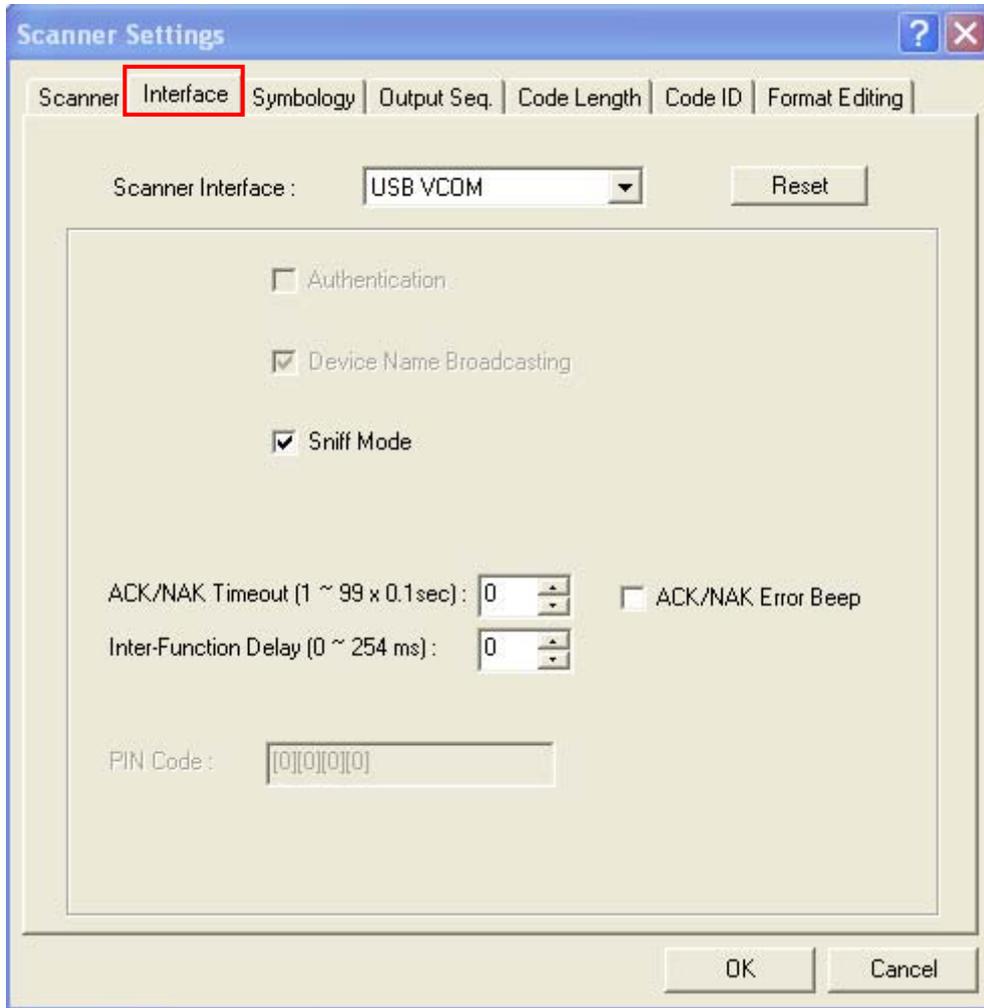
2.6 USB HID

For the connection settings, refer to [2.3 Bluetooth HID](#).



2.7 USB VIRTUAL COM

For the connection settings, refer to [2.4 Bluetooth SPP Slave Mode](#).



CHANGING SYMBOLOGY SETTINGS

Barcode symbologies are application-dependent. You may enable or disable any of them, and configure their parameters according to the requirements of a specific application.

The screenshot shows the 'Scanner Settings' dialog box with the 'Symbology' tab selected. The 'Symbology' tab is highlighted with a red box. Below the tab, there are several rows of symbology settings, each with a checkbox and a 'Configure...' button. The settings are:

- Code 39 UPCE ISBT 128
- Italian Pharmacode UPCA
- French Pharmacode EAN 8
- Industrial 25 GS1-128
- Interleaved 25 MSI
- Matrix 25 Plessey
- Codabar Telepen
- GS1 DataBar Code 93
- EAN 13 Code 128

At the bottom of the dialog, there are several fields and buttons:

-
- 0
- Normal
-
- [Enter]
-
-

Red boxes highlight the 'Remove Special Character', 'Add-on Security Level', 'Letter Case', 'Prefix Code', and 'Suffix Code' fields. Red lines connect these fields to external reference boxes:

- Remove Special Character: Refer to [4.7 Remove Special Character](#)
- Add-on Security Level: Refer to [1.1.6 Addon Security for UPC/EAN](#)
- Letter Case: Refer to [4.1 Letter Case](#)
- Prefix Code and Suffix Code: Refer to [4.3 Prefix/Suffix Code](#)

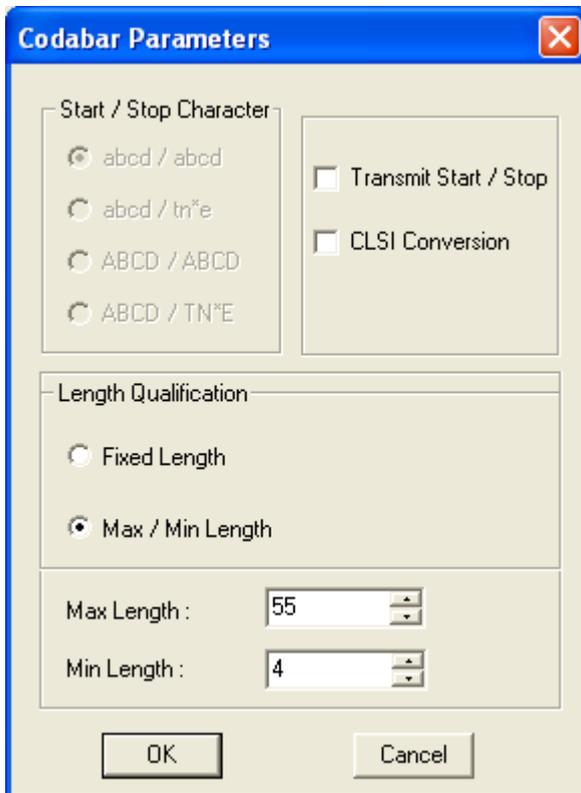
IN THIS CHAPTER

3.1 Codabar.....	47
3.2 Code 25 — Industrial 25	48
3.3 Code 25 — Interleaved 25.....	49
3.4 Code 25 — Matrix 25	50
3.5 Code 39.....	51
3.6 Code 93.....	52
3.7 Code 128.....	53
3.8 EAN-8	54
3.9 EAN-13.....	54
3.10 GS1-128 (EAN-128)	55
3.11 ISBT 128	56
3.12 MSI	57
3.13 Italian Pharmacode.....	58
3.14 GS1 DataBar (RSS Family)	58
3.15 UPC-A.....	60
3.16 UPC-E.....	61
3.17 1D More.....	62
3.18 2D Symbologies	67

3.1 CODABAR

By default, the scanner is set to read Codabar barcodes.

- ▶ Advanced settings are provided as shown below.



Transmit Start/Stop Character

Select the check box so that the selected start/stop characters will be included in the data being transmitted.

CLSI Conversion

Select the check box so that the start/stop characters will be stripped and a space will be inserted after the first, fifth, and tenth characters of a 14-character barcode.

- ▶ This applies to 14-character barcodes only; barcode length does not include the start and stop characters.

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. The barcode can be qualified by "Fixed Length" or "Max/Min Length".

- ▶ For "Fixed Length", up to 2 fixed lengths can be specified.
- ▶ For "Max/Min Length", the maximum length and the minimum length must be specified. The scanner will only accept those barcodes with lengths that fall between max/min lengths specified.

3.2 CODE 25 – INDUSTRIAL 25

By default, the scanner is set to read Industrial 25 barcodes.

- ▶ Advanced settings are provided as shown below.



Length Qualification

Because of the weak structure of the 2 of 5 barcodes, it is possible to make a "short scan" error. To prevent the "short scan" error, configure the "Length Qualification" settings to ensure that the correct barcode is read by qualifying the allowable code length. The barcode can be qualified by "Fixed Length" or "Max/Min Length".

- ▶ For "Fixed Length", up to 2 fixed lengths can be specified.
- ▶ For "Max/Min Length", the maximum length and the minimum length must be specified. The scanner will only accept those barcodes with lengths that fall between max/min lengths specified.

3.3 CODE 25 – INTERLEAVED 25

By default, the scanner is set to read Interleaved 25 barcodes.

- ▶ Advanced settings are provided as shown below.

Transmit Check Digit

The check digit will be included in the data being transmitted.

Cancel the check box if the check digit is not desired.

Convert to EAN 13

Decide whether to convert a 14-character barcode to 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.

Length Qualification

Because of the weak structure of the 2 of 5 barcodes, it is possible to make a "short scan" error. To prevent the "short scan" error, configure the "Length Qualification" settings to ensure that the correct barcode is read by qualifying the allowable code length. The barcode can be qualified by "Fixed Length" or "Max/Min Length".

- ▶ For "Fixed Length", up to 2 fixed lengths can be specified.
- ▶ For "Max/Min Length", the maximum length and the minimum length must be specified. The scanner will only accept those barcodes with lengths that fall between max/min lengths specified.

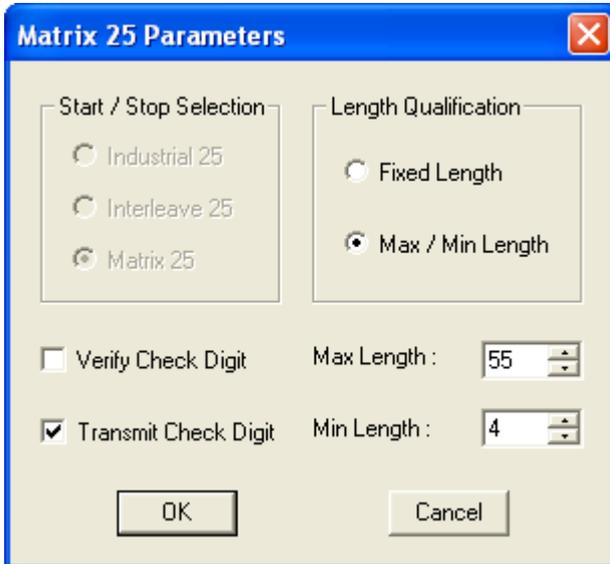
Verify Check Digit

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

3.4 CODE 25 – MATRIX 25

Select the check box so that the scanner can read Matrix 25 barcodes.

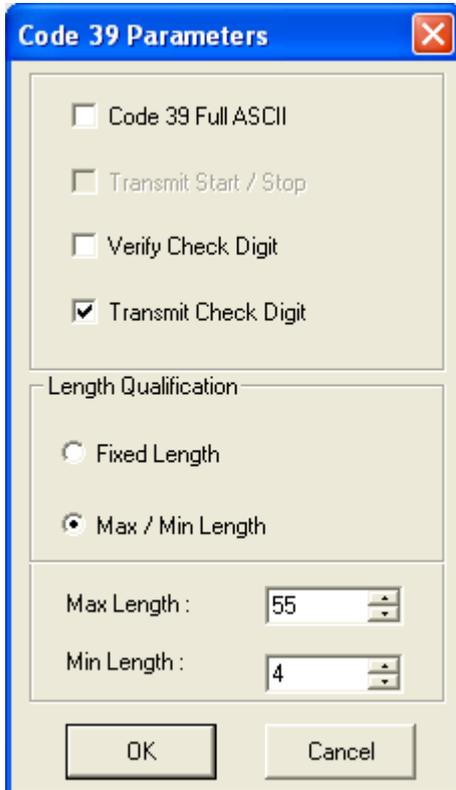
- ▶ Advanced settings are provided as shown below. Refer to Industrial 25.



3.5 CODE 39

By default, the scanner is set to read Code 39 barcodes.

- ▶ Advanced settings are provided as shown below.



Code 39 Full ASCII

Select the check box so that the scanner will support Code 39 Full ASCII that includes all the alphanumeric and special characters.

Verify Check Digit

Select the check box so that the scanner will verify check digit when decoding Code 39 barcodes. If the check digit is incorrect, the barcode will not be accepted.

Transmit Check Digit

The check digit will be included in the data being transmitted.

Cancel the check box if the check digit is not desired.

Length Qualification

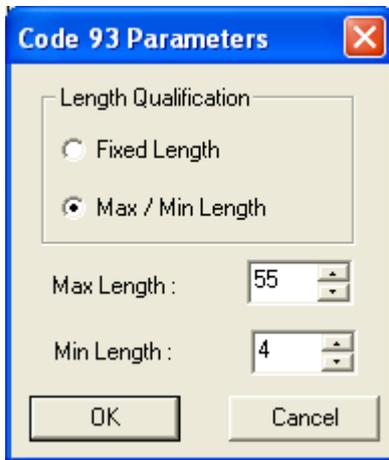
To prevent the "short scan" error, define the "Length Qualification" settings to ensure that the correct barcode is read by qualifying the allowable code length. The barcode can be qualified by "Fixed Length" or "Max/Min Length".

- ▶ For "Fixed Length", up to 2 fixed lengths can be specified.
- ▶ For "Max/Min Length", the maximum/minimum length must be specified. The scanner will only accept those barcodes with lengths that fall between max/min lengths specified.

3.6 CODE 93

By default, the scanner is set to read Code 39 barcodes.

- ▶ Advanced settings are provided as shown below.



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. The barcode can be qualified by "Fixed Length" or "Max/Min Length".

- ▶ For "Fixed Length", up to 2 fixed lengths can be specified.
- ▶ For "Max/Min Length", the maximum/minimum length must be specified. The scanner will only accept those barcodes with lengths that fall between max/min lengths specified.

3.7 CODE 128

By default, the scanner is set to read Code 128 barcodes.

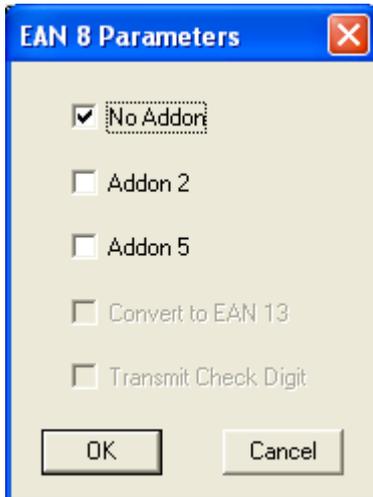
- ▶ No advanced settings are available.

3.8 EAN-8

By default, the scanner is set to read EAN-8 barcodes. (= No Addon)

Options of 2-digit and 5-digit extensions are available. Select the check box so that it can read Addon 2 and/or Addon 5.

- ▶ Advanced settings are provided as shown below.



EAN-8 Family

Select the check box to enable at least one type of the EAN-8 barcodes.

- ▶ EAN-8 (No Addon)
- ▶ EAN-8 Addon 2
- ▶ EAN-8 Addon 5

3.9 EAN-13

By default, the scanner is set to read EAN-13 barcodes. (= No Addon)

Options of 2-digit and 5-digit extensions are available. Select the check box so that it can read Addon 2 and/or Addon 5.

- ▶ Advanced settings are provided as shown below.



EAN-13 Family

Select the check box to enable at least one type of the EAN-13 barcodes.

- ▶ EAN-13 (No Addon)
- ▶ EAN-13 Addon 2
- ▶ EAN-13 Addon 5

ISBN Conversion

Select the check box so that the reading of EAN-13 barcodes that starts with 978 and 979 will be converted to ISBN.

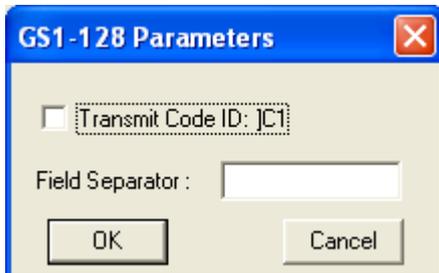
ISSN Conversion

Select the check box so that the reading of EAN-13 barcodes that starts with 977 will be converted to ISSN.

3.10 GS1-128 (EAN-128)

Select the check box so that the scanner can read GS1-128 (also known as EAN-128) barcodes.

- ▶ Advanced settings are provided as shown below.



Transmit Code ID

Select the check box so that the default Code ID ("]C1") will be included in the data being transmitted.

Field Separator

The FNC1 character is used to separate fields in the barcode. It is not represented in the readable text. To replace the FNC1 character with readable characters, click the field and choose characters from the pop-up window of Grid Control (see [Appendix I Grid Control](#)).

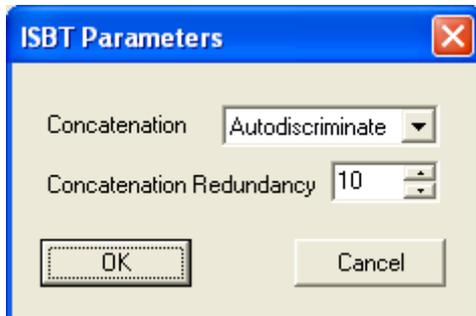
- ▶ Up to 2 characters can be chose from the Grid Control.

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.

3.11 ISBT 128

By default, the scanner is set to read ISBT 128 barcodes.

- ▶ Advanced settings are provided as shown below.



Concatenation

Decide whether to decode and concatenates 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.

Concatenation Redundancy

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

3.12 MSI

Select the check box so that the scanner can read MSI barcodes.

- ▶ Advanced settings are provided as shown below.

Check Digit Verification

Select the calculation used to verify MSI barcodes. If the check digit is incorrect, the barcode will not be accepted.

Check Digit Transmission

Select the way the check digits will be included in the data being transmitted.

Length Qualification

Because of the weak structure of MSI barcodes, it is possible to make a "short scan" error. To prevent the "short scan" error, configure the "Length Qualification" settings to ensure that the correct barcode is read by qualifying the allowable code length. The barcode can be qualified by "Fixed Length" or "Max/Min Length".

- ▶ For "Fixed Length", up to 2 fixed lengths can be specified.
- ▶ For "Max/Min Length", the maximum length and the minimum length must be specified. The scanner will only accept MSI barcodes with lengths that fall between max/min lengths specified.

3.13 ITALIAN PHARMACODE

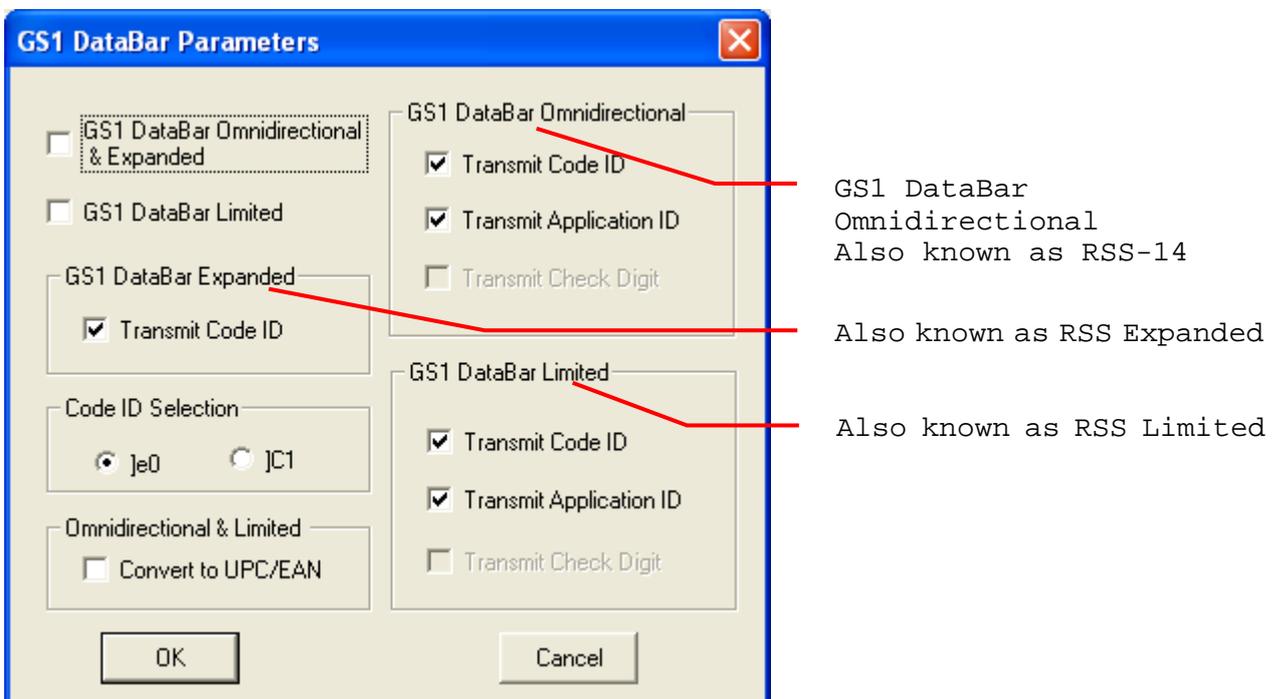
Select the check box so that the scanner can read Italian Pharmacode barcodes.

Note: Code 39 must be enabled first.

3.14 GS1 DATABAR (RSS FAMILY)

Select the check box so that the scanner can read GS1 DataBar (also known as RSS) barcodes.

► Advanced settings are provided as shown below.



GS1 DataBar (RSS Family)

Select the check box to enable at least one type of the GS1 DataBar barcodes.

- GS1 DataBar Omnidirectional & Expanded
- GS1 DataBar Limited

Code ID Selection

By default, the Code ID of GS1 DataBar (RSS) barcodes is "Je0". You may select to use "JC1" instead.

- "JC1" is the Code ID of GS1-128 (EAN-128) barcodes.

Transmit Code ID

The selected Code ID will be included in the data being transmitted.
Cancel the check box if the Code ID is not desired.

Transmit Application ID

The Application ID will be included in the data being transmitted.
Cancel the check box if the Application ID is not desired.

Transmit Check Digit

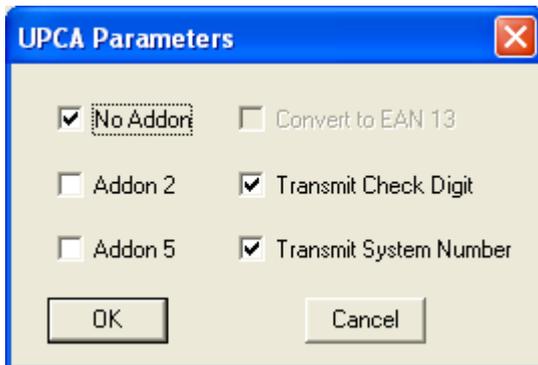
The check digit will be included in the data being transmitted.
Cancel the check box if the check digit is not desired.

3.15 UPC-A

By default, the scanner is set to read UPC-A barcodes. (= No Addon)

Options of 2-digit and 5-digit extensions are available. Select the check box so that it can read Addon 2 and/or Addon 5.

- ▶ Advanced settings are provided as shown below.



UPC-A Family

Select the check box to enable at least one type of the UPC-A barcodes.

- ▶ UPC-A (No Addon)
- ▶ UPC-A Addon 2
- ▶ UPC-A Addon 5

Transmit Check Digit

The UPC-A check digit will be included in the data being transmitted.

Cancel the check box if the check digit is not desired.

Transmit System Number

The system number will be included in the data being transmitted.

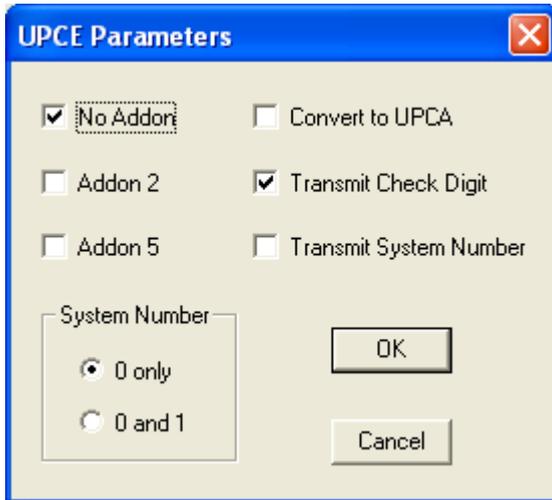
Cancel the check box if the system number is not desired.

3.16 UPC-E

By default, the scanner is set to read UPC-E barcodes. (= No Addon)

Options of 2-digit and 5-digit extensions are available. Select the check box so that it can read Addon 2 and/or Addon 5.

- ▶ Advanced settings are provided as shown below.



UPC-E Family

Select the check box to enable at least one type of the UPC-E barcodes.

- ▶ UPC-E (No Addon)
- ▶ UPC-E Addon 2
- ▶ UPC-E Addon 5

System Number

By default, the scanner is set to read the ordinary UPC-E barcodes (= UPC-E0 only). You may change it to read both UPC-E0 and UPC-E1 barcodes.

Convert to UPC-A

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

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

Transmit System Number

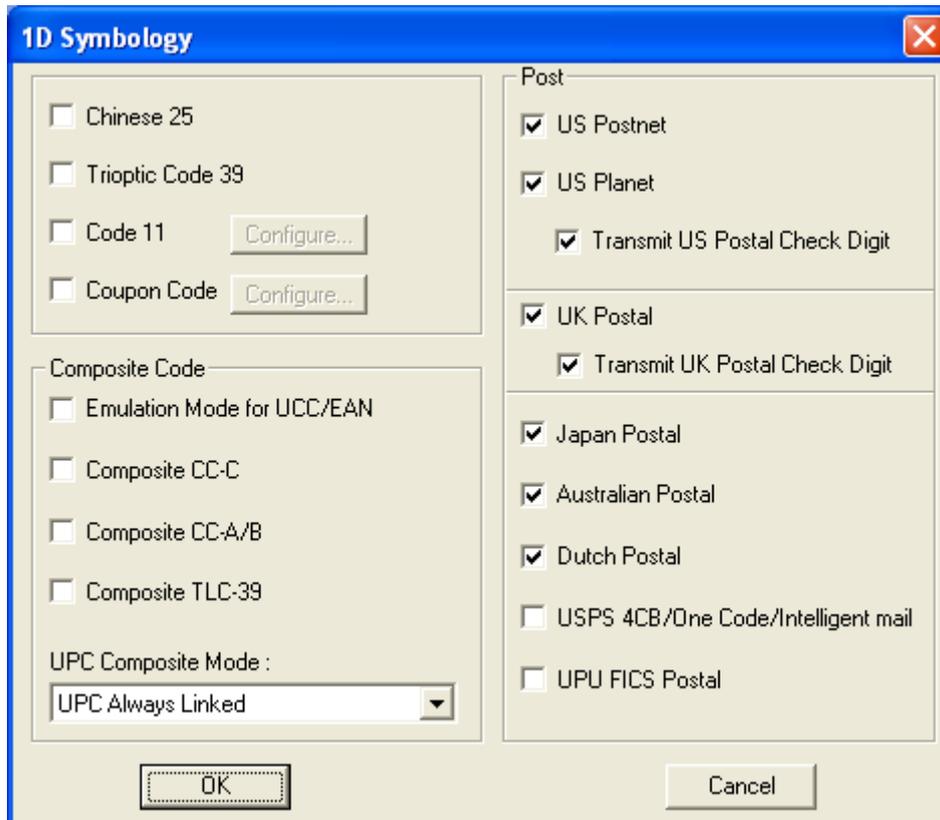
Select the check box so that the system number will be included in the data being transmitted.

Transmit Check Digit

The check digit will be included in the data being transmitted.

Cancel the check box if the check digit is not desired.

3.17 1D MORE



3.17.1 CHINESE 25

Select the check box so that the scanner can read Chinese 25 barcodes.

3.17.2 TRIOPTIC CODE 39

Select the check box so that the scanner can read Trioptic Code 39 barcodes.

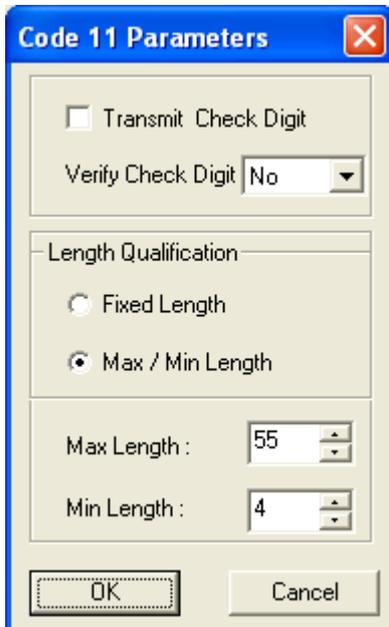
- ▶ Trioptic Code 39 is a variant of Code 39 used in the marking of computer tape cartridges. It always contains six characters.

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

3.17.3 CODE 11

Select the check box so that the scanner can read Code 11 barcodes.

- ▶ Advanced settings are provided as shown below.



Verify Check Digit

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

Transmit Check Digit

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

Length Qualification

To prevent the "short scan" error, configure the "Length Qualification" settings to ensure that the correct barcode is read by qualifying the allowable code length. The barcode can be qualified by "Fixed Length" or "Max/Min Length".

- ▶ For "Fixed Length", up to 2 fixed lengths can be specified.
- ▶ For "Max/Min Length", the maximum length and the minimum length must be specified. The scanner will only accept those barcodes with lengths that fall between max/min lengths specified.

3.17.4 COUPON CODE

Select the check box so that the scanner can read Coupon Code.

- ▶ Advanced settings are provided as shown below.



Coupon Code Settings

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

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

3.17.5 COMPOSITE CODE

Select the check box so that the scanner can read Composite Code.

- ▶ Composite CC-A/B
- ▶ Composite CC-C
- ▶ Composite TLC-39

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

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.

3.17.6 POSTAL CODE

By default, the scanner is set to read the following Postal Code:

- ▶ US Postnet
- ▶ US Planet
- ▶ UK Postal
- ▶ Japan Postal
- ▶ Australian Postal
- ▶ Dutch Postal

Select the check box so that the scanner can read the following Postal Code:

- ▶ USPS 4CB/One Code/Intelligent Mail
- ▶ UPU FICS Postal

Transmit Check Digit for US/UK Postal
Decide whether to include the check digit in the data being transmitted.

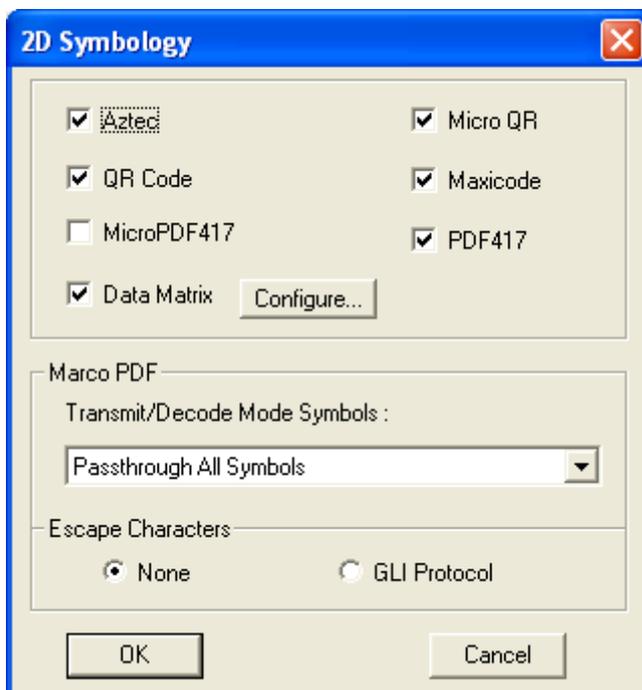
3.18 2D SYMBOLOGIES

By default, the scanner is set to read the following 2D symbologies:

- ▶ Aztec
- ▶ MicroQR
- ▶ QR Code
- ▶ Maxicode
- ▶ PDF417
- ▶ Data Matrix

Select the check box so that the scanner can read the following 2D symbologies:

- ▶ MicroPDF417
- ▶ Macro PDF



Data Matrix Mirror

Decide whether to decode mirror image Data Matrix barcodes.

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

Macro PDF

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

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.

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.

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

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 [Code Length](#) 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.
- 4) Add [Prefix Code](#) and [Suffix Code](#) before transmission: [Prefix Code][Processed Data][Suffix Code]

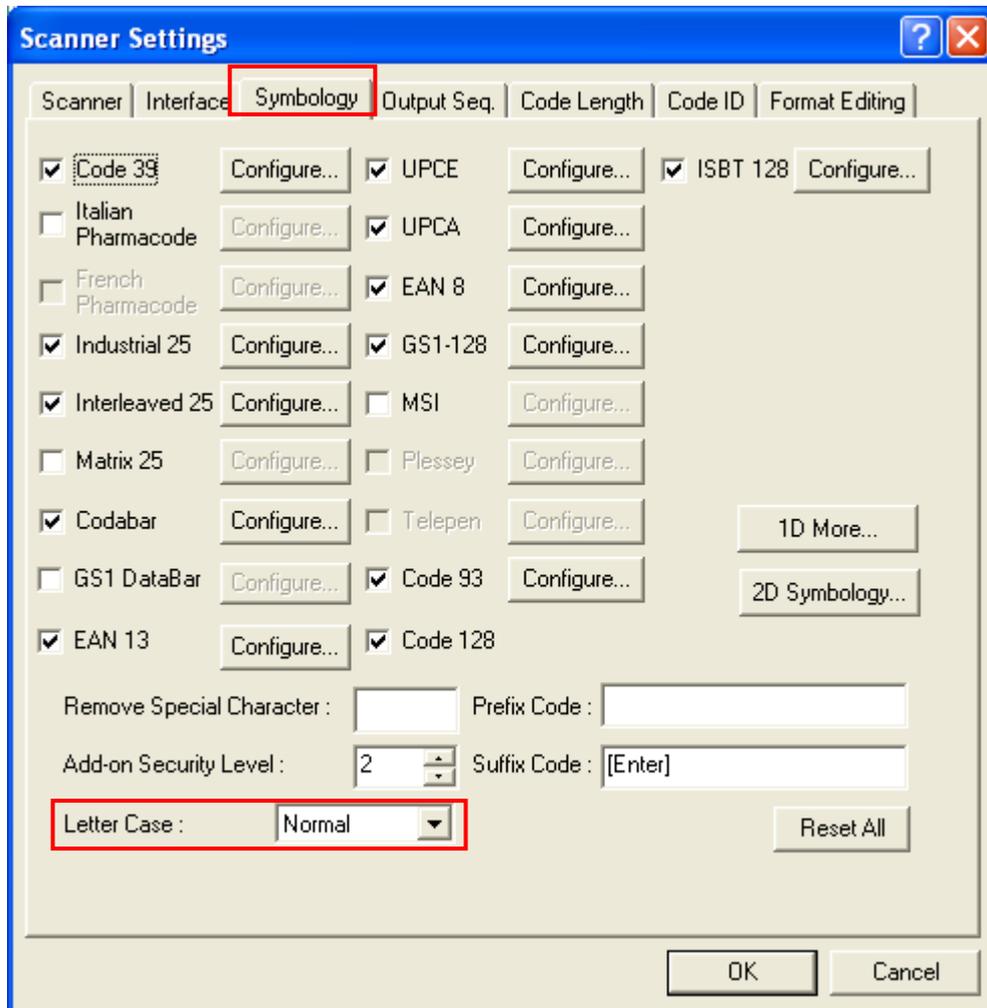
Refer to [How to Configure the Scanner](#) for the flow chart of data process.

IN THIS CHAPTER

4.1 Letter Case	70
4.2 Character Substitution	71
4.3 Prefix/Suffix Code	73
4.4 Code ID.....	74
4.5 Code Length.....	77
4.6 Output Sequence (Multi-Barcode Editor)	78
4.7 Remove Special Character	80

4.1 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.



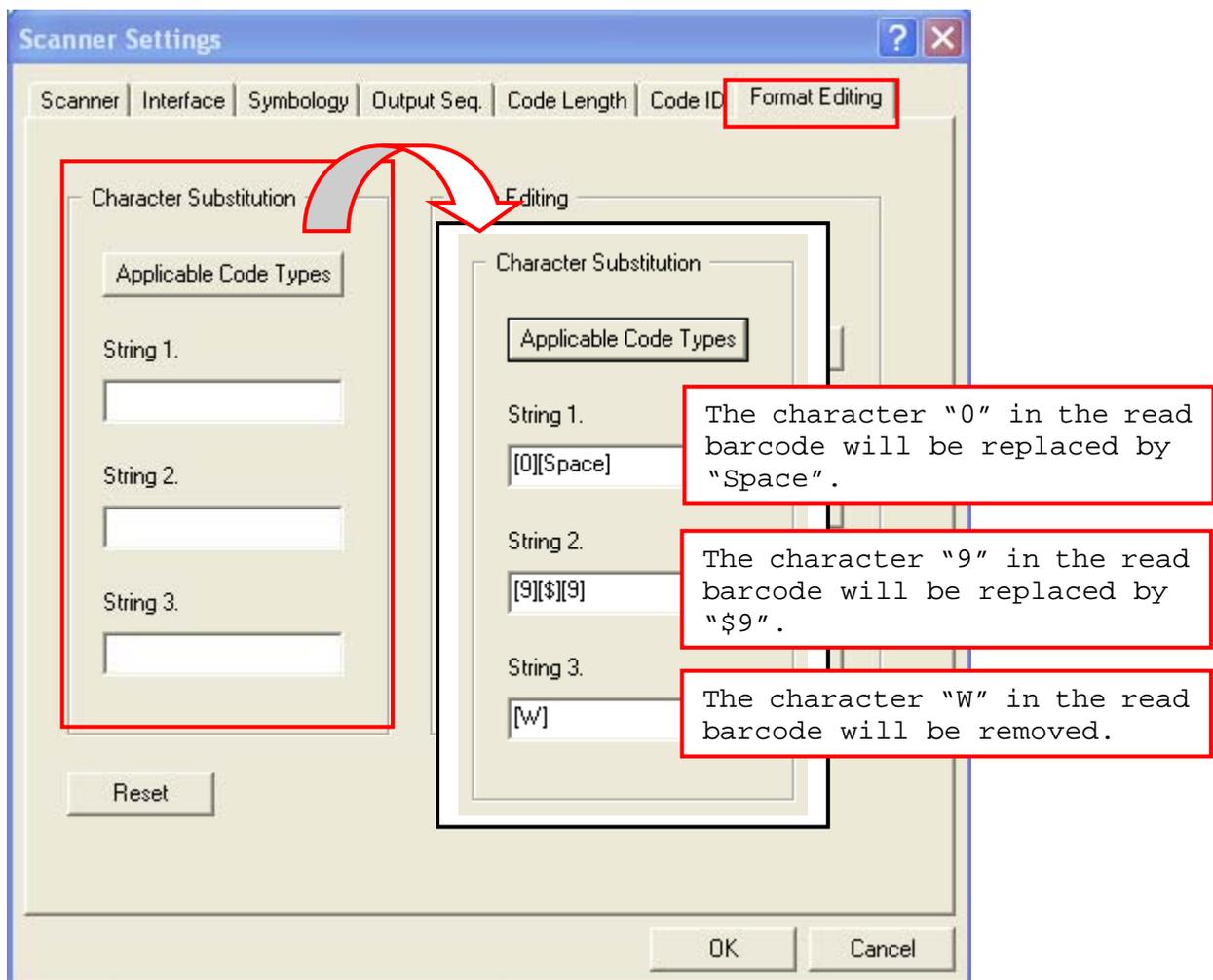
4.2 CHARACTER SUBSTITUTION

“Character Substitution” replaces a character wherever it comes up in a collected data. Click on the “String” field to pop up the Grid Control window (see [Appendix I Grid Control](#)). The first character assigned in the field means the same one found in the collected data is to be replaced; one or more characters assigned following the first one will be used together as the substitution character(s).

If only one character is assigned in the “String” field, the same character found in the collected data will be taken away.

- ▶ The second character (and the character thereafter) assigned in the “String” field will replace the first character.
- ▶ Up to three sets of character substitution can be configured.

Note: “Character Substitution” works for the collected data only and is applied before the data goes through editing formats. “Character Substitution” is therefore not applicable to the Prefix/Suffix Code, Code ID, Length Code, or any Additional Field.



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

Key Type	Key Status
Scan Code	N/A
Normal Key	<ul style="list-style-type: none"> ▶ Add Shift ▶ Add Left Ctrl ▶ Add Left Alt ▶ Add Right Ctrl ▶ Add Right Alt ▶ Add Break <p>For example, choose [A], and then select one of the above keys, say, [Add Shift], and choose the character [B] from the Grid Control. It will replace the character [A] with [Shift+B].</p>

Note: It only allows choosing one scan code value. However, you may choose an ASCII character, and then switch from "Normal Key" to "Scan Code" and choose a scan code to replace the ASCII character with scan code value.

4.2.1 APPLICABLE CODE TYPES

By default character substitution will be performed on all symbologies. If it is not desired with one or more symbologies, click this button and then cancel the check box of each undesired symbologies and all the three sets will not be applied to them.

4.3 PREFIX/SUFFIX CODE

Click the Prefix Code or Suffix Code field so that you can choose characters from the pop-up window of Grid Control (see [Appendix I Grid Control](#)).

- ▶ Prefix Code: None
- ▶ Suffix Code: By default, [ENTER] or [CR] (Carriage Return) is entered.

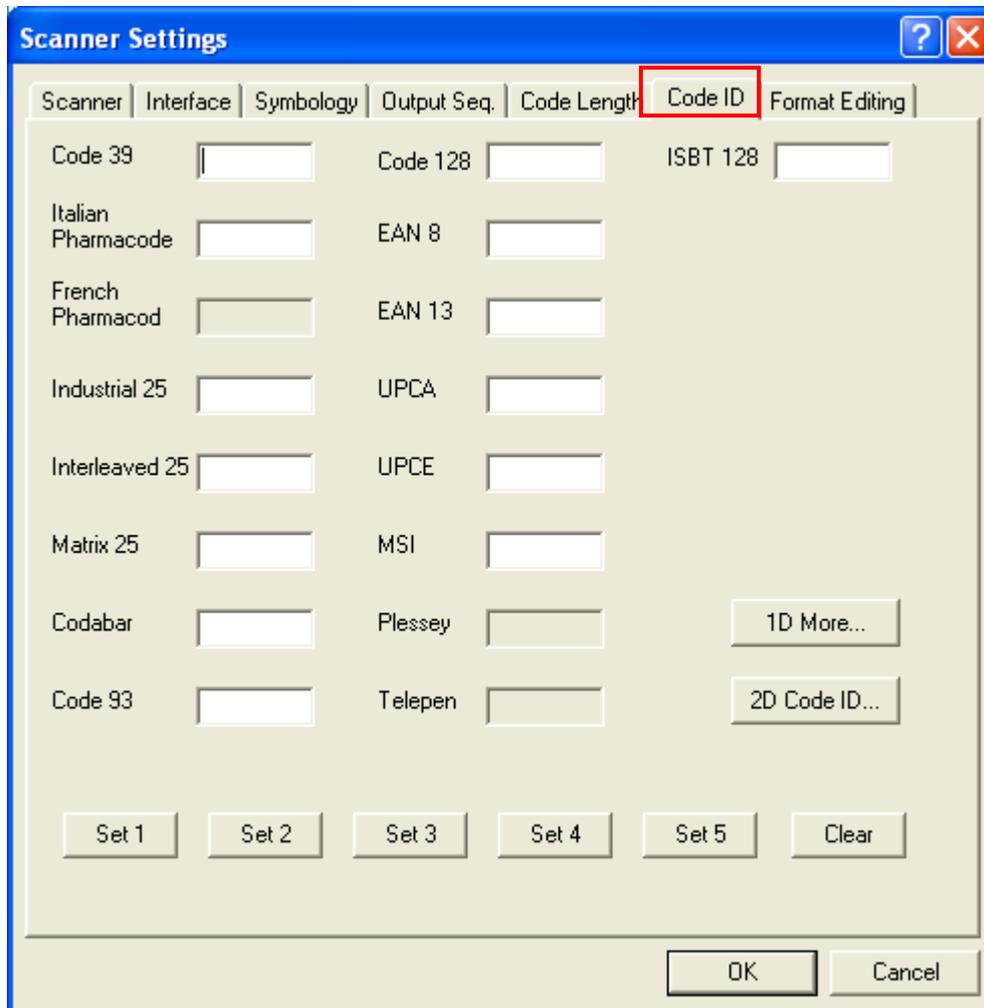
Originally, "Normal Key" is in use by default, Up to eight characters can be chose from the Grid Control. For example, "Barcode_", and you will have the string appear in front of the barcode read, like this — "Barcode_1234567890".

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

Key Type	Key Status
Scan Code	N/A
Normal Key	<ul style="list-style-type: none"> ▶ Add Shift ▶ Add Left Ctrl ▶ Add Left Alt ▶ Add Right Ctrl ▶ Add Right Alt ▶ Add Break <p>For example, select one of the above keys, say, [Add Shift], and choose the character [A] from the Grid Control.</p>

4.4 CODE ID

To make the Code ID configuration easier, we provide five pre-defined Code ID sets that you can make necessary changes.



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

4.4.1 CODE ID SET 1~5

Code ID options	Set 1	Set 2	Set 3	Set 4	Set 5
<i>Code 39</i>	A	C	Y	M	A
<i>Italian Pharmacode</i>	A	C	Y	M	A
<i>Industrial 25</i>	C	H	H	H	S
<i>Interleaved 25</i>	D	I	Z	I	S
<i>Matrix 25</i>	E	G	G	G	S
<i>Codabar</i>	F	N	X	N	F
<i>Code 93</i>	I	L	L	L	G
<i>ISBT 128</i>	H	K	K	K	C
<i>Code 128</i>	H	K	K	K	C
<i>UPC-E</i>	S	E	C	E	E
<i>EAN-8</i>	P	B	B	FF	E
<i>EAN-13</i>	M	A	A	F	E
<i>UPC-A</i>	J	A	A	A	E
<i>MSI</i>	V	V	D	P	M

4.4.2 CHANGE CODE ID

To modify the Code ID, click the field next to a symbology. Then, choose your Code ID from the pop-up window of Grid Control (see [Appendix I Grid Control](#)).

Up to two characters for Code ID can be configured for each symbology.

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

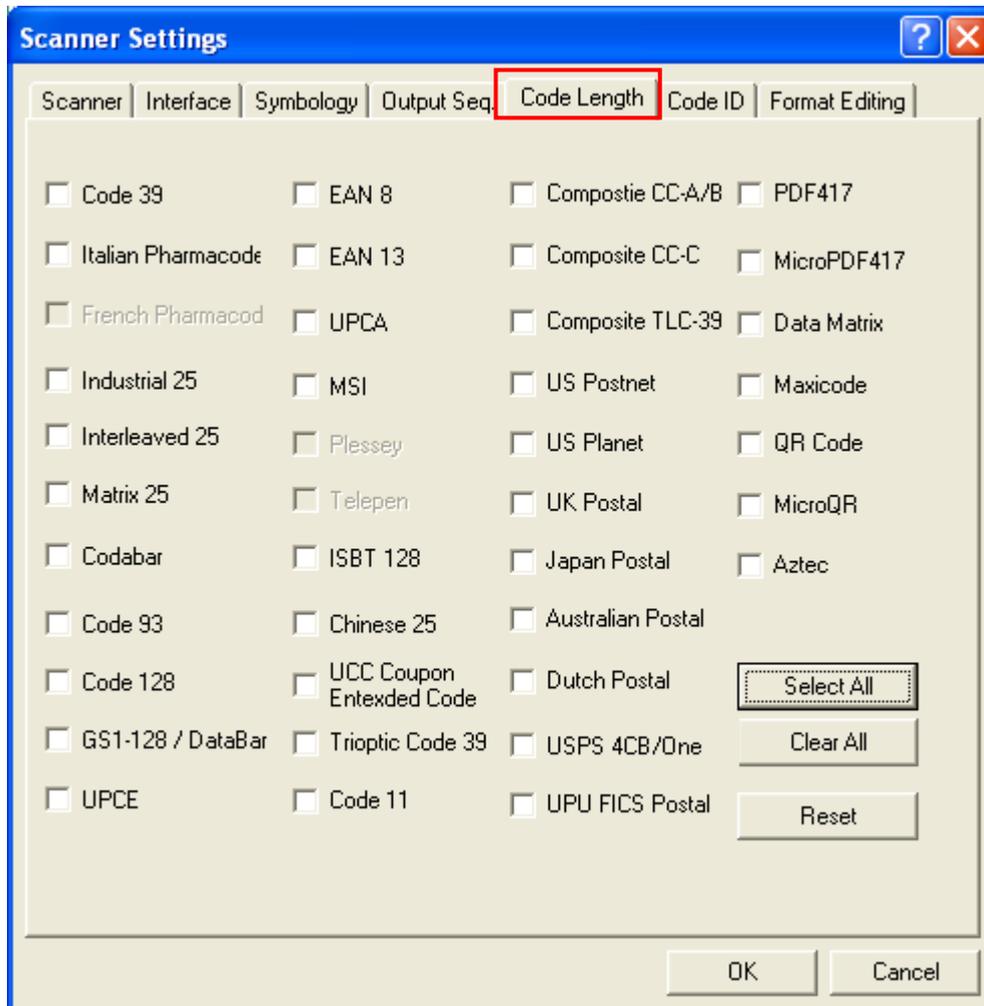
Key Type	Key Status
Scan Code	N/A
Normal Key	<ul style="list-style-type: none"> ▶ Add Shift ▶ Add Left Ctrl ▶ Add Left Alt ▶ Add Right Ctrl ▶ Add Right Alt ▶ Add Break <p>For example, select one of the above keys, say, [Add Shift], and choose the character [A] from the Grid Control.</p>

4.4.3 CLEAR

Click this button to clear the current settings. Default settings will be loaded. That is, the Code ID settings are empty.

4.5 CODE LENGTH

A two-digit code representing the length of barcode data (character count) can be inserted in front of the data being transmitted. Such length code can be individually enabled or disabled for each symbology. By default, no length code is added to output data for all symbologies.



4.6 OUTPUT SEQUENCE (MULTI-BARCODE EDITOR)

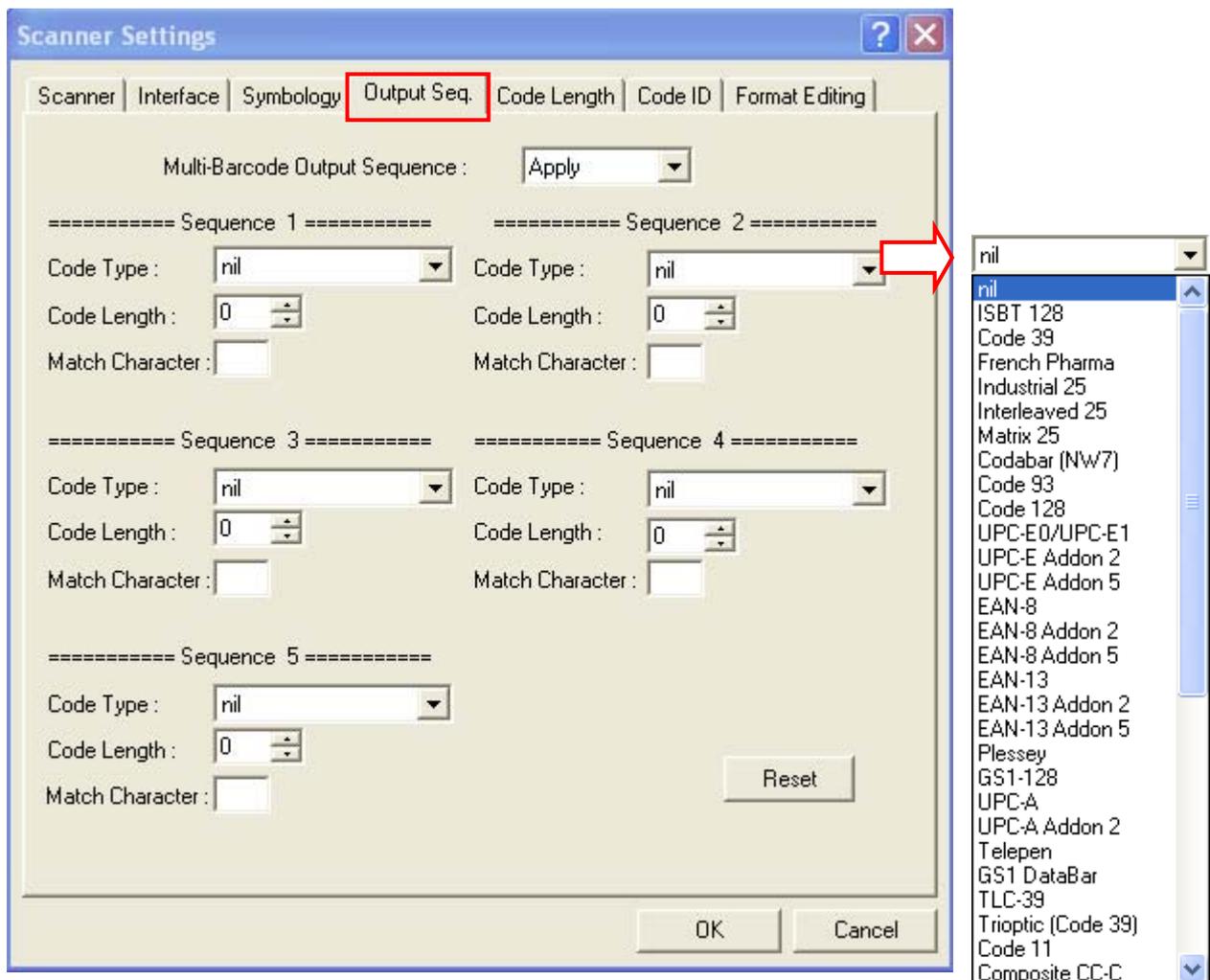
The Multi-Barcode Editor allows you to decide the output sequence of a concatenation of barcodes. Up to five barcodes can be specified. When you enable this mode, it will force the scanner to apply Laser mode as the scan mode.

The maximum output data length of all the barcodes is 10 KB after configuration. When the data length exceeds 10 KB, the concatenation will not apply.

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
- ▶ Barcode length, excluding prefix, suffix, length code, etc. — set “0” to ignore length.
- ▶ Matching the first character of data — leave it blank to ignore character matching.



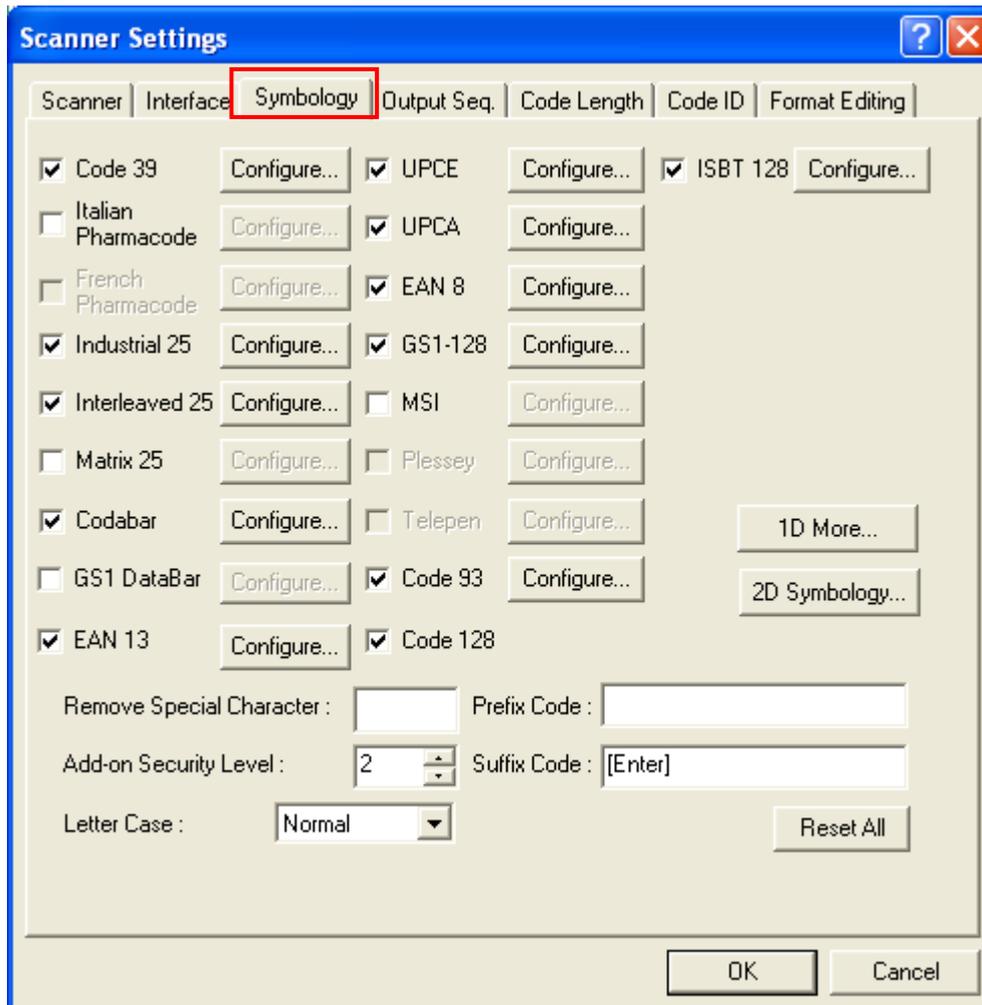
By default, the output sequence editing of the concatenation of barcodes is not applied – “Ignored”. When “Enforce” is selected, all barcodes read by the scanner must meet with

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" is selected, only barcodes found meeting with the criteria are counted for the concatenation. Those found not meeting with the criteria are processed normally and individually.

4.7 REMOVE 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. Choose a character from the pop-up window of Grid Control.

For example, if it is specified to remove the character "0", 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.



APPLYING EDITING FORMATS

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

- ▶ Up to five different formats can be specified.
- ▶ The maximum output data length of all the barcodes is 7 KB after configuration. When the data length exceeds 7 KB, the concatenation will not take effect.

IN THIS CHAPTER

5.1 Format Selection	82
5.2 Configure Editing Format	83

5.1 FORMAT SELECTION

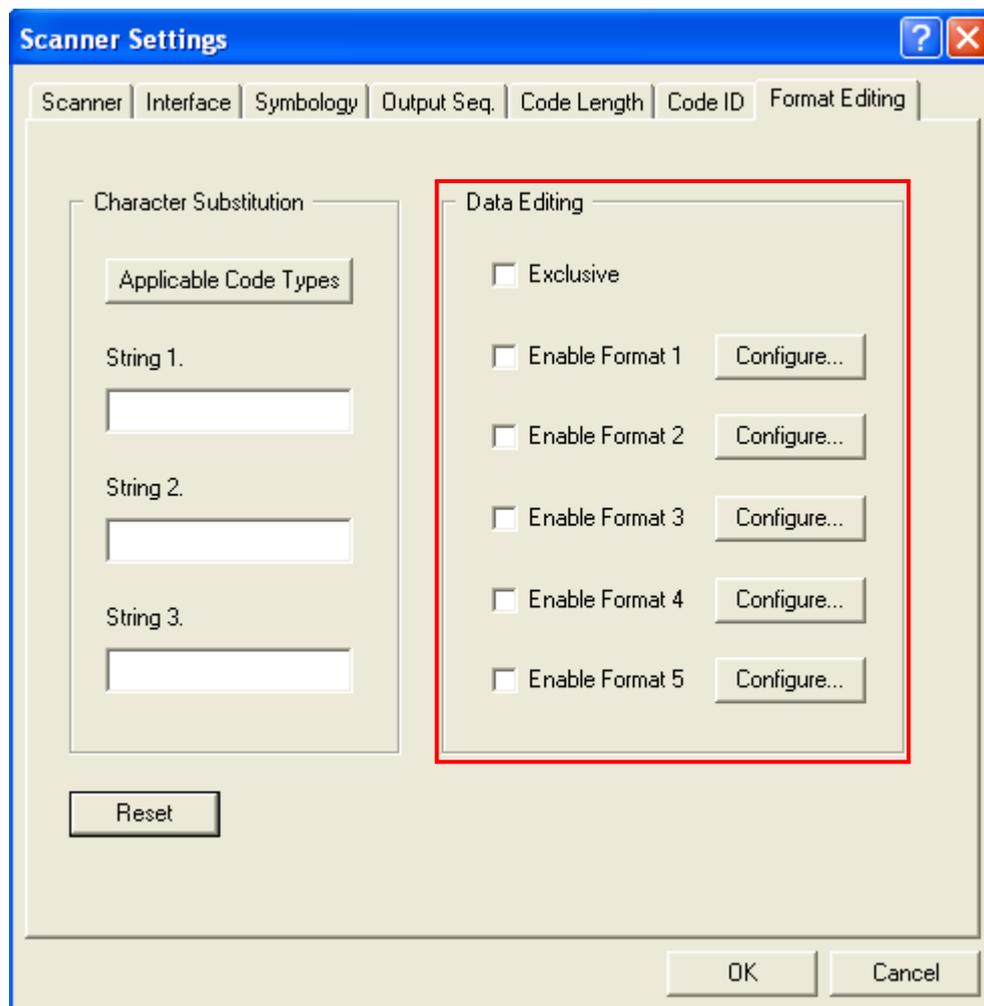
5.1.1 ENABLE EDITING FORMATS

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, select the check box to enable any of the five editing formats when it is desired in use.

5.1.2 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.

Select the check box to apply "Exclusive Data Editing". When applied, 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.

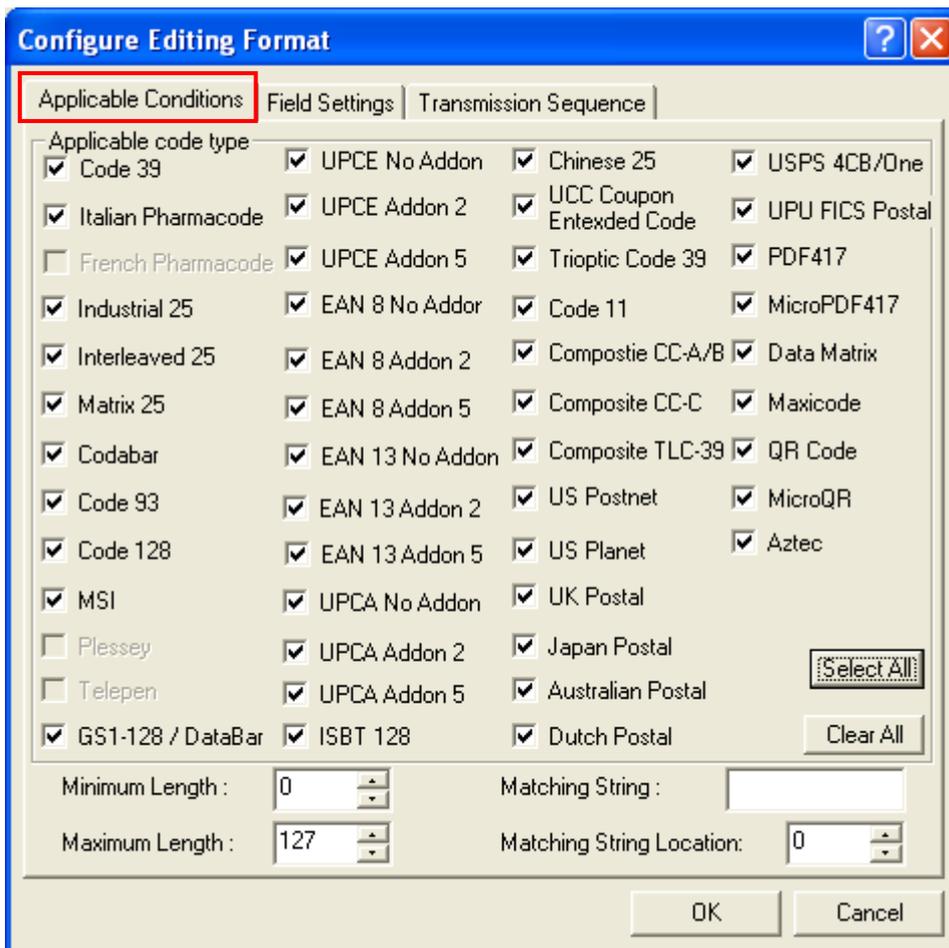


5.2 CONFIGURE EDITING FORMAT

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

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

5.2.1 APPLICABLE CONDITIONS



Applicable Code Type

By default, barcodes of all the supported symbologies are eligible for data editing.

- ▶ Cancel the check box next to a symbology for which data editing is not desired.

Data Length

The length must include prefix, suffix (0x0d by default), length code, etc. By default, barcodes with length (character count) ranging from 0 to 127 are eligible for data editing.

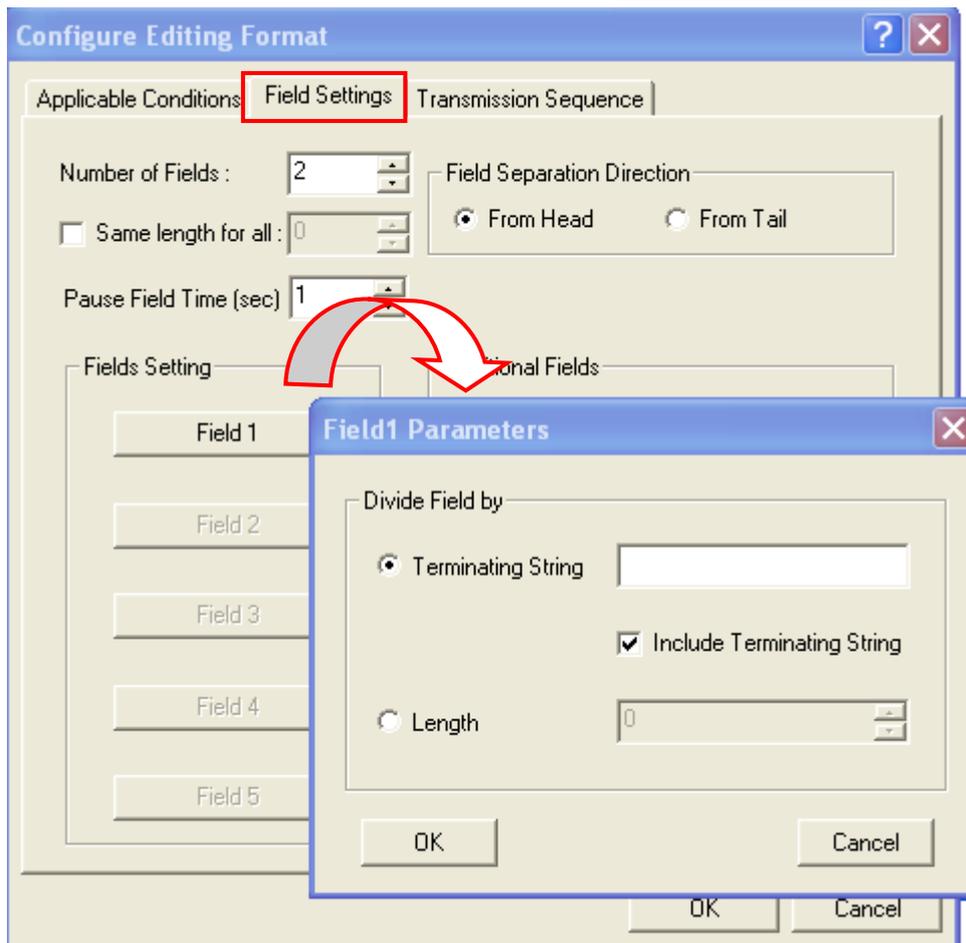
- ▶ Enter a value from 0 to 254.
- ▶ When zero is given to both, the scanner will not perform the length qualification.

Matching String & Location

By default, no matching string is entered, and therefore, it is disabled. You may enable this feature by entering a matching string. Choose up to four characters from the pop-up window of Grid Control (see [Appendix I Grid Control](#)).

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

5.2.2 FIELD SETTINGS



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 entered 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.

Length Adjustment

You may apply equal length to all fields, if necessary. Select the check box and enter a desired length. It will add "Space" (0x20) to field when data is found shorter than specified.

Field Separation Direction

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

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

Pause Field Time (sec)

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

Field Setting

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

Enter the field terminating string. Choose up to two characters from the pop-up window of Grid Control (see [Appendix I Grid Control](#)). The scanner will search for the occurrence of this particular string in the data. Alternatively, you may simply enter the field length. The scanner will assign the next specified number of characters into the field.

- ▶ By default, this terminating string, if exists, will be included in the field. If you wish to discard it, cancel the check box.

Additional Fields

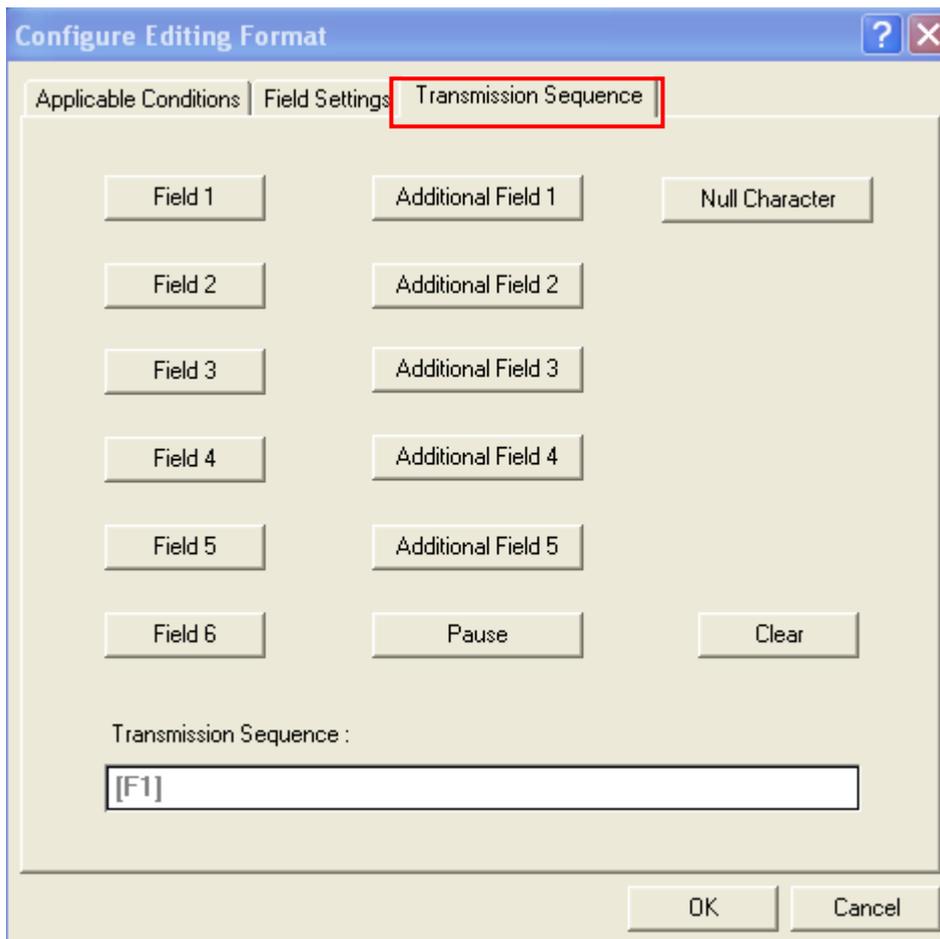
Up to five additional fields can be created for each editing format; each of them is numbered from AF1 to AF5 accordingly. To configure the Additional Fields setting, click the associated field and choose up to four characters from the pop-up window of Grid Control (see [Appendix I Grid Control](#)).

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.

5.2.3 TRANSMISSION SEQUENCE

After configuring the data fields and additional fields, users can now program the transmission sequence of these fields that comprise the final data. It also allows inserting pause or null character between fields.

Simply click on the buttons of these fields and pause in sequence, and they will appear in the Transmission Sequence field. This field transmission sequence can be assigned in any desired order and fields can be assigned multiple times as well. The maximum number of fields can be assigned is twelve.

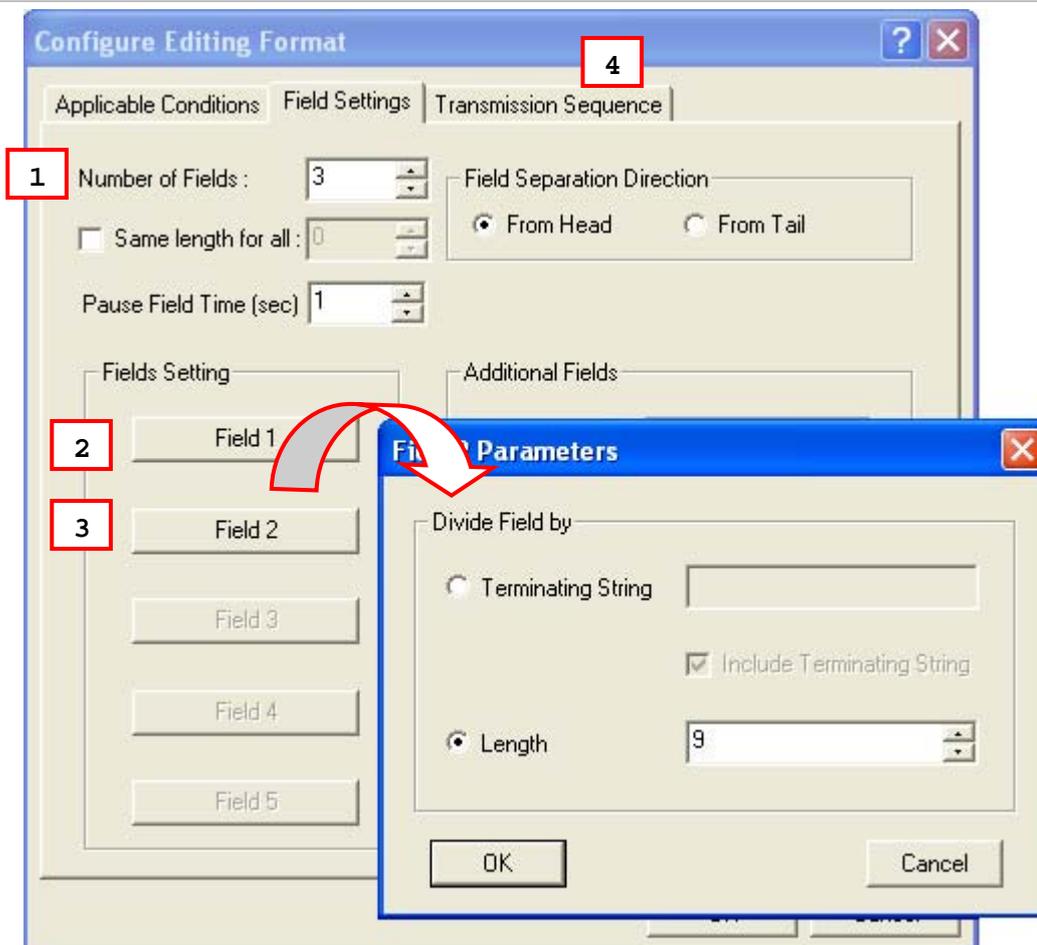


5.2.4 EXAMPLES

Example 1 – Extract data from the 10th character to the 19th character...

The editing format should be configured as follows:

1. Set Number of Fields to "3".
2. Set Field1 Parameters: divide field by Length, and set length to "9".
Field1 = from the 1th character to the 9th character
3. Set Field2 Parameters: divide field by Length, and set length to "10".
Field2 = from the 10th character to the 19th character
4. Set Transmission Sequence to transmit "F2" only.



Example 2 – Extract the date code, item number, and quantity information from barcodes.

Data is encoded in the barcode like this:

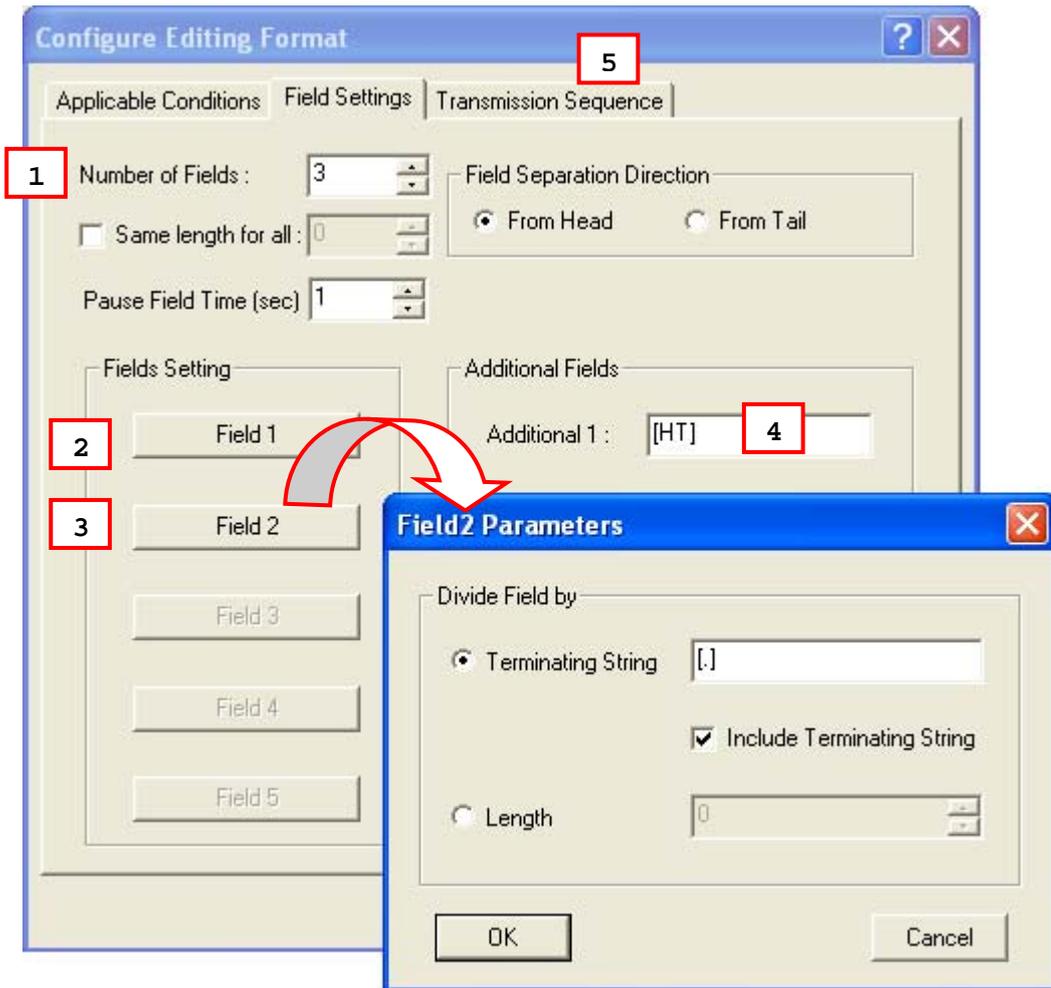
- From the 1st character to the 6th character is the date code.
- From the 7th character to the "-" character is the item number.
- After the "-" character is the quantity information.

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. Set Number of Fields to "3".
2. Set Field1 Parameters: divide field by Length, and set length to "6".
Field1 = from the 1th character to the 6th character
3. Set Field2 Parameters: divide field by Terminating String, and set the string to "-".
Field2 = from the 7th character to the "-" character
4. Set Additional Field 1 to one "TAB" character.
5. Set Transmission Sequence to transmit "F2 A1 F1 A1 F3".

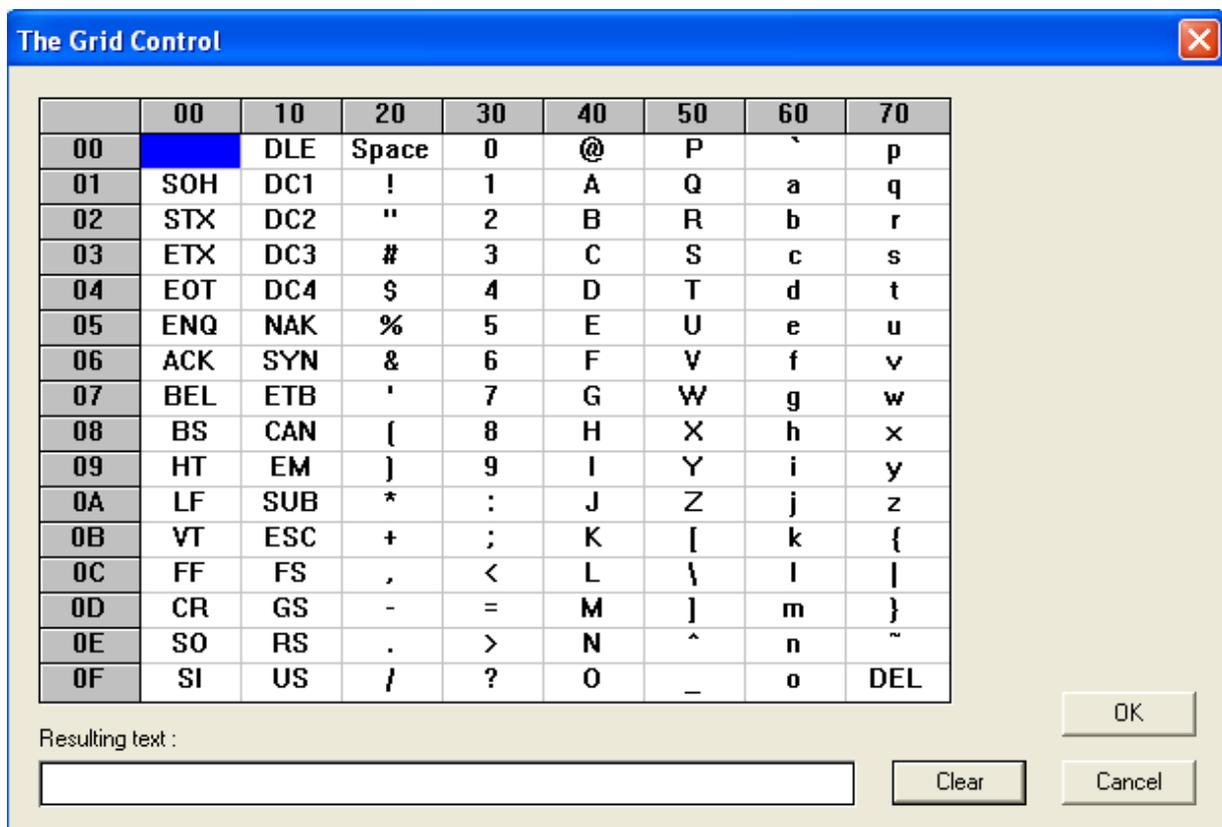


GRID CONTROL

ORIGINAL GRID CONTROL

This is used for the following settings:

- ▶ MAC address for Bluetooth SPP Master
- ▶ Field Separator for GS1-128
- ▶ Remove Special Character



Note: For a TAB character, click "HT".

SPECIAL GRID CONTROL FOR KEYBOARD INTERFACE

This is used for the following settings:

- ▶ Character Substitution
- ▶ Prefix/Suffix Code
- ▶ Code ID
- ▶ Additional Fields for configuring editing format

Note: This is available only when "Keyboard Wedge", "BT HID" or "USB HID" is selected for interface.

GRID CONTROL – NORMAL KEY

By default, each character programmed is a "Normal Key". Such a character can have associate status settings by adding the Shift/Control/Alternate keys.

The Grid Control

	00	10	20	30	40	50	60	70	80
00		F2	Space	0	@	P	`	p	0*
01	Insert	F3	!	1	A	Q	a	q	1*
02	Delete	F4	"	2	B	R	b	r	2*
03	Home	F5	#	3	C	S	c	s	3*
04	End	F6	\$	4	D	T	d	t	4*
05	Up	F7	%	5	E	U	e	u	5*
06	Down	F8	&	6	F	V	f	v	6*
07	Left	F9	'	7	G	W	g	w	7*
08	BS	F10	{	8	H	X	h	x	8*
09	HT	F11	}	9	I	Y	i	y	9*
0A	LF	F12	*	:	J	Z	j	z	
0B	Right	ESC	+	;	K	[k	{	
0C	PgUp	Exec	,	<	L	\	l		
0D	Enter	Send	-	=	M]	m	}	
0E	PgDn		.	>	N	^	n	~	
0F	F1		/	?	O	_	o	Delay	Enter*

Key Type

Scan Code

Normal Key

Key Status

Add Shift

Add Left Ctrl

Add Left Alt

Add Right Ctrl

Add Right Alt

Resulting text :

[\$]

Clear Cancel OK

Note: For a TAB character, click "HT".

For example, if you want to program "Ctrl-Shift-B", "C" for Prefix Code, the programming sequence is as follows:

- 1) Click the Prefix Code field.
- 2) Select "Normal Key" for Key Type in the Grid Control window.
- 3) Select the check box of "Add Left Ctrl" and "Add Shift" for Key Status.
- 4) Choose "B" from the ASCII table.
- 5) Cancel the check box of "Add Left Ctrl" and "Add Shift".
- 6) Choose "C" from the ASCII table.
- 7) Click [OK] to confirm the setting.

GRID CONTROL – SCAN CODE

Select "Scan Code" so that the scanner is configured to program a character by its scan code value.

The Grid Control ✖

	00	10	20	30	40	50	60	70	80	90	A0	B0	C0	D0	E0	F0
00	00	10	20	30	40	50	60	70	80	90	A0	B0	C0	D0	E0	F0
01	01	11	21	31	41	51	61	71	81	91	A1	B1	C1	D1	E1	F1
02	02	12	22	32	42	52	62	72	82	92	A2	B2	C2	D2	E2	F2
03	03	13	23	33	43	53	63	73	83	93	A3	B3	C3	D3	E3	F3
04	04	14	24	34	44	54	64	74	84	94	A4	B4	C4	D4	E4	F4
05	05	15	25	35	45	55	65	75	85	95	A5	B5	C5	D5	E5	F5
06	06	16	26	36	46	56	66	76	86	96	A6	B6	C6	D6	E6	F6
07	07	17	27	37	47	57	67	77	87	97	A7	B7	C7	D7	E7	F7
08	08	18	28	38	48	58	68	78	88	98	A8	B8	C8	D8	E8	F8
09	09	19	29	39	49	59	69	79	89	99	A9	B9	C9	D9	E9	F9
0A	0A	1A	2A	3A	4A	5A	6A	7A	8A	9A	AA	BA	CA	DA	EA	FA
0B	0B	1B	2B	3B	4B	5B	6B	7B	8B	9B	AB	BB	CB	DB	EB	FB
0C	0C	1C	2C	3C	4C	5C	6C	7C	8C	9C	AC	BC	CC	DC	EC	FC
0D	0D	1D	2D	3D	4D	5D	6D	7D	8D	9D	AD	BD	CD	DD	ED	FD
0E	0E	1E	2E	3E	4E	5E	6E	7E	8E	9E	AE	BE	CE	DE	EE	FE
0F	0F	1F	2F	3F	4F	5F	6F	7F	8F	9F	AF	BF	CF	DF	EF	FF

Key Type

Scan Code

Normal Key

Key Status

Add Shift

Add Left Ctrl

Add Left Alt

Add Right Ctrl

Add Right Alt

OK

Resulting text :

Clear

Cancel