CipherLab
User Guide

ScanMaster for Scanner Configuration

For 1 Series Barcode Scanners:
1070, 1500, 1502 (1D, tethered)
1560, 1562, 1660, 1661 (1D, cordless)
1504, 1704 (2D, tethered)
1564, 1664 (2D, cordless)

Version 1.30

CIPHERLAB CO., LTD.
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RELEASE NOTES

Version	Date	Notes
1.30	Dec. 08, 2011	▸ New model 1664 included. Changes applied throughout the manual. Critical updates are: ○ "RTC Time Setup" newly inserted under **Tools Menu** ○ 1.2 "Power Management" updated ○ 1.2.2 "Power-Saving" updated ○ 1.14 "Pager Beep" newly inserted ○ 5.3 "Date & Time Stamp" newly inserted ▸ Modified: 1.13.1 "Fixed Gain" isn't available for 1504, 1564 and 1664. ▸ Modified: 1.13.2: "Decoding Autoexposure" enabled for 1504, 1564, 1664, and isn't subject to change. ▸ Modified: 1.13.2 "Fixed Gain" isn't available for 1504, 1564 and 1664.
1.21	Sep. 7, 2011	▸ New: "Picklist Mode" (for 1504/1564/1704) added for section 1.11. ▸ New: "Auto Power Off Ignoring Scan Mode" (for 1560/1564) added for sections 1.2, 1.2.1, 1.2.2 and 1.2.3. ▸ New: "Kanji Transmission" Support: ○ Section 2.1.10 added for 1504/1564/1704 Keyboard Wedge ○ Section 2.4.9 added for 1564 Bluetooth HID and section 2.7 added for 1564 USB HID via 3656. ○ Screenshot modified in section 2.7. ○ Screenshot modified in section 2.9. ○ Section 2.9.4 added for 1504/1704 Direct USB HID.
1.20	Jul. 13, 2011	▸ Modified: 1.1.4 Re-read Delay — add Presentation Mode ▸ Modified: 2.1.1 Keyboard Type — add #31 PCAT (Hungarian) ▸ Modified: 2.4 Bluetooth HID — update screenshot, add Inter-Character Delay ▸ Modified: 2.4.1 Keyboard Type — add #77 PCAT (Hungarian) ▸ Modified: 2.7 USB HID via 3656/3610 — update screenshot ▸ Modified: 2.9 Direct USB HID — add Inter-Character Delay for 1070 ▸ Modified: 2.9.3 Secondary Interface for 1661 — add Send Data Time-out for 1661 ▸ Modified: 2.10.3 Secondary Interface for 1661 — add Send Data Time-out for 1661
1.19	Mar. 04, 2011	▸ Modified: 1.1 Scan Mode — add support of Presentation Mode for 1704
1.18	Mar. 02, 2011	▸ New: add 1504, 1564 ▸ Modified: Introduction — 1560/1562/1660 supports Settings Type in Tools Menu | Read or Download scanner settings

1.17	Jan. 10, 2011	▸ New: add 1070 ▸ Modified: Introduction — 1661 supports Settings Type in Tools Menu | Read or Download scanner settings ▸ Modified: 1.8.2 Send Data & Clear Memory (Secondary Interface for 1661) ▸ New: 2.9.2 Manual Switch of Interface for 1070 ▸ New: 2.9.3 Secondary Interface for 1661 ▸ New: 2.10.2 Manual Switch of Interface for 1070 ▸ New: 2.10.3 Secondary Interface for 1661 ▸ New: 2.11 Direct USB CDC Virtual COM ▸ Modified: 3.10 GS1-128 (EAN-128) — Decode behavior
1.16	Nov. 29, 2010	▸ New: add 1661 ▸ New: Introduction — add System Requirements ▸ Modified: 1.2 Power Management — supports 1661 ▸ Modified: 1.2.3 Low Battery Alarm — supports 1661 ▸ Modified: 1.8 Memory Mode — supports 1661 ▸ Modified: 1.10 Transmit Buffer — supports 1661
1.15	Sep. 29, 2010	▸ New: add 1502 ▸ New: 2.9 Direct USB HID ▸ New: 2.10 Direct USB Virtual COM ▸ Modified: 3.16 GS1 DataBar (RSS Family) ▸ Modified: 5.2.2 Field Settings — add Pause Field Time ▸ Modified: 5.2.3 Transmission Sequence — add Pause, update screenshot ▸ Modified: 5.2.4 Examples — add Pause, update screenshots
1.14	May 12, 2010	▸ Support 1704 ▸ Modified: Download Menu changed to Tools Menu and add "2D Image Processing" ▸ Modified: 1.2 Power Management (1560/1562/1660) — add Bluetooth SPP Master Mode for 1560/1562 ▸ Modified: 1.7 Auto Sense (1500/1560) — updated ▸ New: 1.11 More Settings (1704) ▸ New: 1.12 2D Decode Settings (1704) ▸ Modified: 2.1.1 Keyboard Type — add Turkish ▸ Modified: 2.4.1 Keyboard Type — add Turkish for Bluetooth HID and USB HID ▸ Modified: 2.4.2 Keyboard Settings — add "Alphabets Layout" for Bluetooth HID and USB HID ▸ New: 2.6 Bluetooth SPP Master Mode — supports 1560/1562 ▸ New: Appendix I 2D Image Processing

1.13	Feb. 04, 2010	▸ Modified: 1.2 Power Management (1560/1562/1660) — add Bluetooth SPP Master Mode for 1660 ▸ Modified: 2.4.1 Keyboard Type — add Turkish for 1660, Bluetooth HID and USB HID ▸ New: 2.4.7 Character Transmit Mode ▸ New: 2.6 Bluetooth SPP Master Mode (1660 Only) ▸ Modified: 3 Changing Symbology Settings — update screenshot ▸ Modified: 3.9 EAN-13 — add Security Level ▸ Modified: 3.11 ISBT 128 — ISBT 128 enabled by default ▸ Modified: 4.1 Length Code — update screenshot ▸ Modified: 4.4 Code ID — update screenshot ▸ Modified: 4.5 Code Length — update screenshot ▸ Modified: 4.7 Remove Special Character — update screenshot ▸ Modified: 5.2.1 Applicable Conditions — update screenshot
1.12	Jul. 31, 2009	▸ 1560/1562 supports keyboard wedge and RS-232 via 3656
1.11	Jul. 07, 2009	▸ New: 1.2 Power Management — add Power-Saving setting (1560/1562/1660) ▸ Modified: 1.2.1 Auto Power Off ▸ 2.4.4 Authentication ▸ 2.5.1 Authentication
1.10	Apr. 21, 2009	Support 1560/1562 ▸ New: 1.10 Transmit Buffer (1560/1562/1660) ▸ New: 2.6 USB HID (1560/1562/1660) ▸ New: 2.7 USB Virtual COM (1560/1562/1660) ▸ New: 4.6 Remove Special Character
1.05	Mar. 02, 2009	▸ Modified: 3.10 GS1-128 (EAN-128) ▸ Modified: 3.16 GS1 DataBar (RSS Family)
1.04	Feb. 11, 2009	▸ Modified: 1.1 Scan Modes — add Alternate Mode ▸ Modified: 1.1.4 Re-read Delay — add Alternate Mode
1.03	Dec. 19, 2008	▸ Modified: 4.6 Multi-Barcode Editor — 4-digit length excludes prefix, suffix, length code, etc. ▸ Modified: 5.2.1 Applicable Conditions — Data length includes prefix, suffix, length code, etc.
1.02	Nov. 14, 2008	▸ Modified: Scanner Information — screenshot updated with new setting for Good Read LED duration ▸ Modified: Chapter 1 Changing Scanner Setting — screenshot updated with new setting for Good Read LED duration ▸ Modified: section 1.3.3 Good Read LED — adds new setting for Good Read LED duration ▸ Modified: section 2.1 Keyboard Wedge — screenshot updated ▸ Modified: section 2.1.10 Inter-Character Delay — allows 0~254

		▸ Modified: section 2.1.11 Inter-Function Delay — allows 0~254 ▸ Modified: section 2.2 RS-232 — screenshot updated ▸ Modified: section 2.2.6 Inter-Character Delay — allows 0~254 ▸ Modified: section 2.2.7 Inter-Function Delay — allows 0~254 ▸ Modified: section 2.4 Bluetooth HID — screenshot updated ▸ Modified: section 2.4.3 Inter-Function Delay — allows 0~254 ▸ Modified: section 2.5 Bluetooth SPP — screenshot updated ▸ Modified: section 2.5.4 Inter-Function Delay — allows 0~254 ▸ Modified: section 5.2.1 Applicable Conditions — Data Length allows 0~254; Matching String Location allows 0~254
1.01	Sep. 16, 2008	▸ Modified: Scanner Information — screenshot updated with new setting for Auto-Sense Sensitivity ▸ Modified: Chapter 1 Changing Scanner Setting — screenshot updated with new setting for Auto-Sense Sensitivity ▸ Modified: section 1.7 Auto Sense (1500 Only) — adds new setting for Auto-Sense Sensitivity
1.00	May 27, 2008	Initial release

CONTENTS

INTRODUCTION

ScanMaster is a utility that makes it easier for you to configure CipherLab Barcode Scanners. It presents two ways for users to update the scanner's configuration – (1) send the new settings to the scanners by direct communication, and (2) print out the setup barcodes for the scanners to read anytime anywhere to load new settings or recover the defaults.

- 1D Scanners: 1070
  1500
  1502
  1560
  1562
  1660
  1661

- 2D Scanners: 1504
  1564
  1664
  1704

This user guide contains information on using ScanMaster. We recommend that you read it thoroughly before use and keep it at hand for quick reference.

Thank you for choosing CipherLab products!

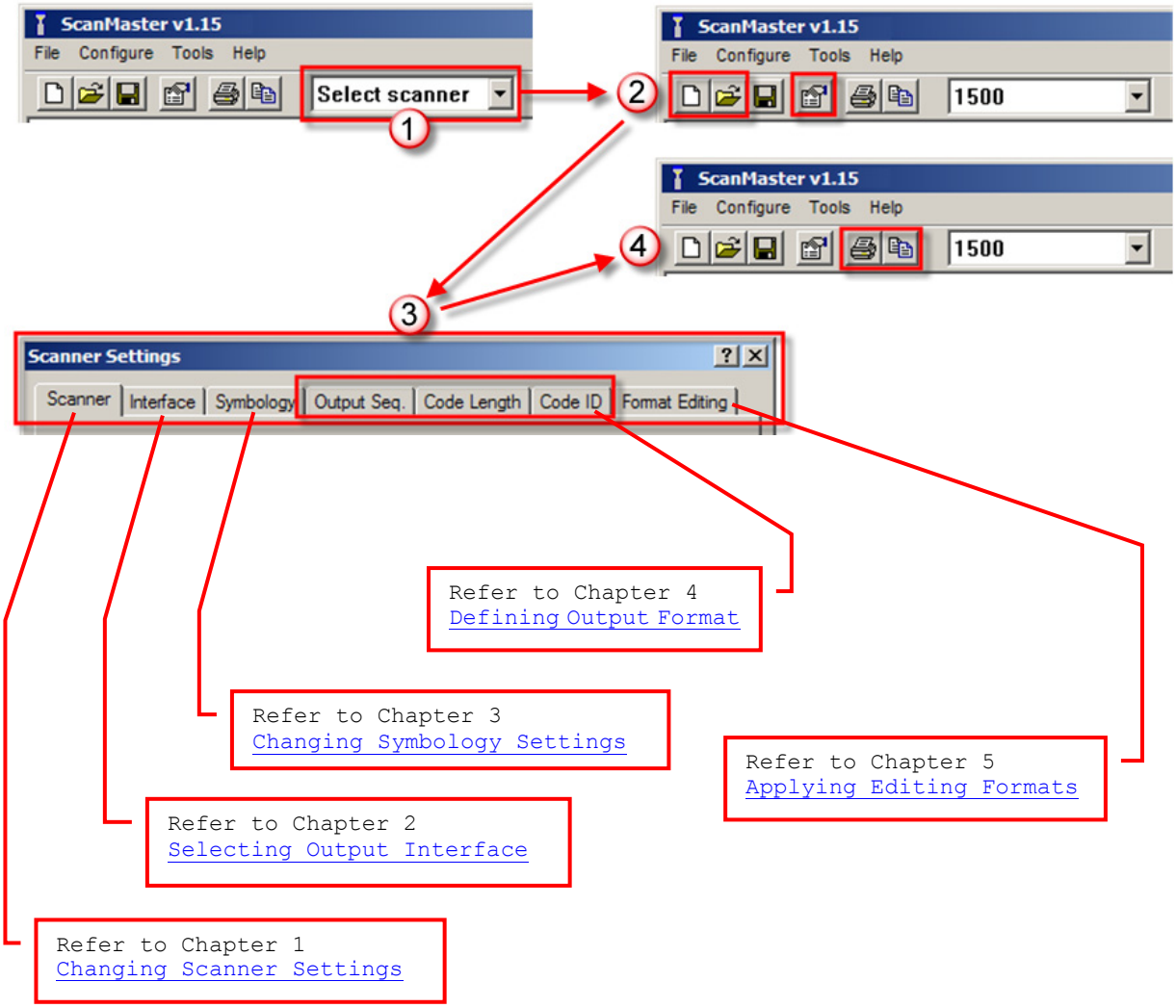
SYSTEM REQUIREMENTS

To run the ScanMaster, one of the Windows operating systems is required:

- Windows 2000
- Windows XP
- Windows Vista
- Windows 7

USING SCANMASTER

The **ScanMaster** is installed with a folder that contains two programs, **ScanMaster.exe** and **PrintBarcode.exe**. They function for the configuration of the scanners. First, run **ScanMaster.exe** on your computer. Select the model you are going to configure, and its configuration can be done by (A) starting a new configuration, (B) opening an existing configuration file, or (C) reading the configuration from a scanner. Then send the configuration to other scanners directly, or generate a file named *Barcode.prn* to keep a copy of the setup barcodes for the configuration.

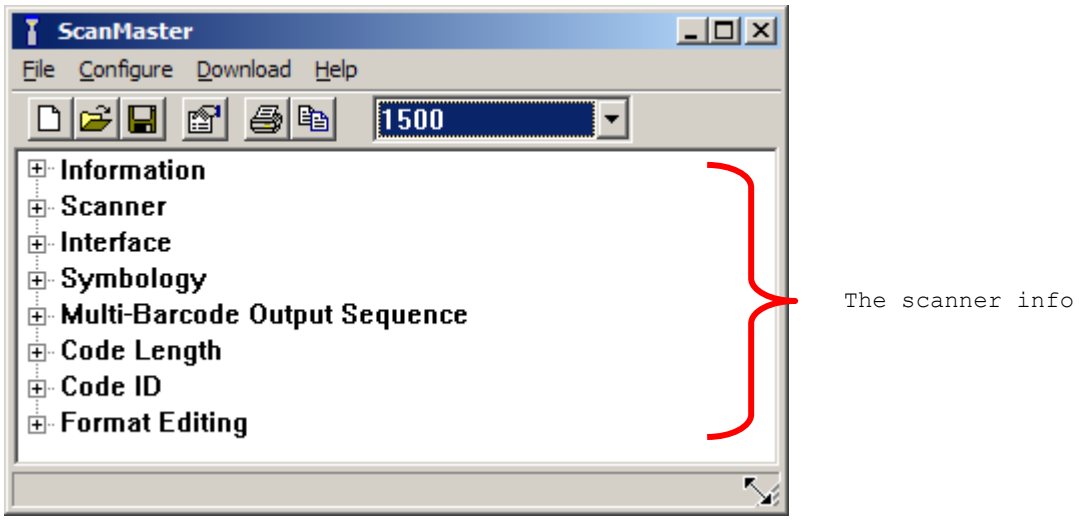


Note: (1) When you choose to generate the setup barcodes, a file named Barcode.prn is brought about inside the directory where the **ScanMaster.exe** and **PrintBarcode.exe** co-exists. If you wish to keep the Barcode.prn file, you need to rename it; otherwise it is overwritten each time a new set of setup barcodes is generated again.
(2) The *.prn file is printable. Open a *.prn file with the **PrintBarcode.exe**.

HOW TO CONFIGURE THE SCANNER?

1) Run **ScanMaster.exe** on your PC.

2) From the drop-down box of [Select Scanner] on the toolbar, select the scanner you are configuring. If you are using ScanMaster for the first time, click the items in the ScanMaster window to see the Scanner Information by category so that the default settings of the scanner can be viewed.



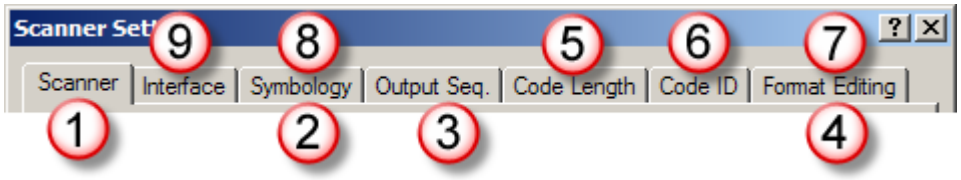
3) To create a new configuration file, click  or  on the toolbar.

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

To clone configuration from another scanner, click **Tools** | **Read Scanner Settings** to fetch the configuration of a source scanner, which has to connect to the host computer via RS-232 or Virtual COM (Bluetooth 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.

4) To configure the scanner. Select **Configure** from the menu bar. The window [Scanner Settings] displays presenting a series of tabbed page as illustrated below. Each tabbed page configures the scanner with a group of settings of the same category.



The tabbed pages are numbered in the order by the process a piece of data goes through. Check out the explanation of each page by matching the numberings below:

1. The scanner will work with the settings specified on the Scanner page.
2. The scanner reads only the barcodes when the corresponding symbologies are enabled, and it outputs data in the desired letter case as selected on the Symbology page.

3. The scanner checks one by one whether the read barcode meets the criteria for a concatenation of barcodes as configured on the Output Sequence page.
4. The scanner performs character substitution as defined on the Format Editing page.
5. The scanner adds a 2-digit length code to the desired symbologies as selected on the Code Length page.
6. The scanner adds a 1- or 2-character identifier to the desired symbologies as selected on the Code ID page.
7. The scanner applies editing formats to the desired symbologies that meet the criteria as configured on the Format Editing page.
8. The scanner adds a prefix/suffix code to the enabled symbologies as selected on the Symbology page.
9. Finally the scanner outputs data via the desired interface.

5) If the scanner is connected to the host computer via RS-232 or Virtual COM (Bluetooth SPP or USB VCOM), you can directly download the settings; otherwise you need to click the  button on the menu bar to print out the setup barcodes to apply the settings to the scanner by reading setup barcodes.

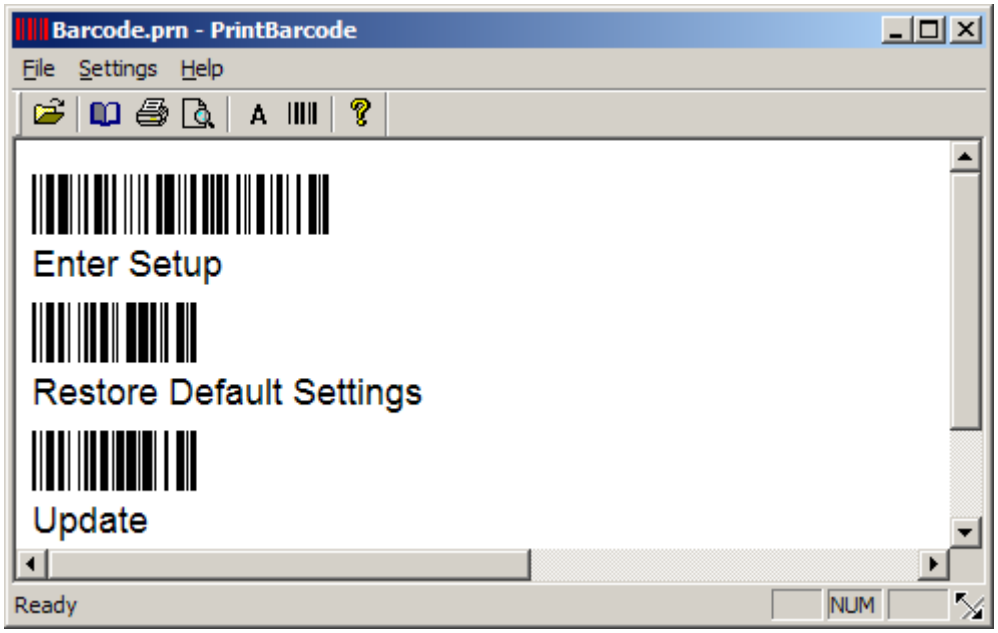
Note: The program PrintBarcode.exe must be in the same folder of ScanMaster.

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

Note: If the scanner is set to the Wand Emulation mode, you need to connect it to a portable data terminal or a decoder that is expecting input from a wand scanner.

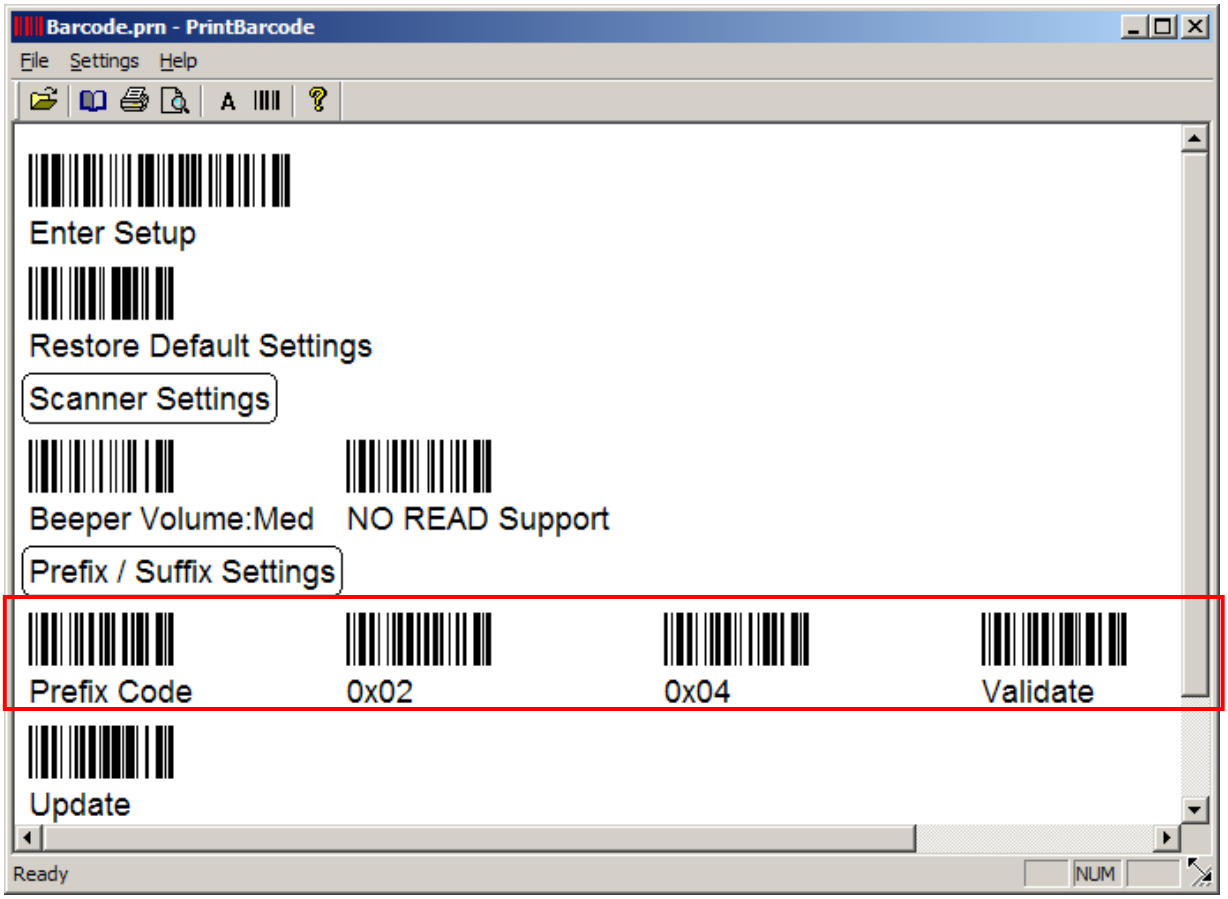
SETUP BARCODES

To recover the default settings, the scanner needs to read these barcodes one by one.



Setup Barcodes	Indication
Enter Setup	Scan this barcode to put the scanner into configuration mode. Upon scanning – ▸ the scanner responds with six beeps (high-low tone repeats three times), and ▸ the LED indicator becomes flashing red
Restore Default Settings	Scan this barcode to restore the scanner to default state. When the scanner has successfully read the barcode – ▸ the scanner responds with two beeps (low-high tone)
Update	Scan this barcode to confirm the updating – ▸ the scanner responds with six beeps (high-low tone repeats three times), and ▸ the LED indicator goes off. When the scanner successfully updates the settings, it restarts itself and responds with one long beep.

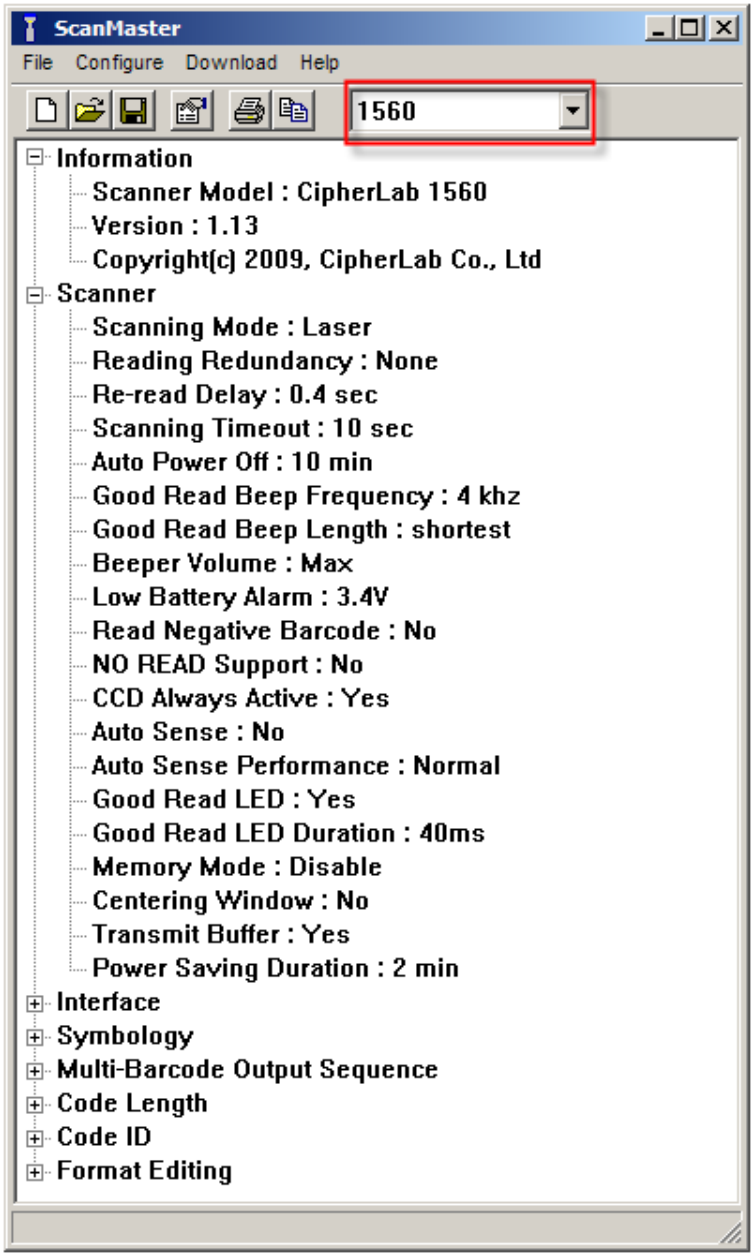
If you want to load new settings, scan associated barcodes. Take the screenshot below for example.



- 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 making any change to the settings, you need to scan the "Update" barcodes to confirm such change. However, if a decimal or hexadecimal value is involved in the setting, you need to scan the "Validate" barcode prior to the "Update" barcode.

SCANNER INFORMATION

After a scanner model is selected, a drop-down tree will be presented in the ScanMaster window. It enables user's quickly view through the categorized information about the scanner. Select one of the available themes to see the default settings of the scanner. If you open an existing configuration file or change the current settings, the information in this tree gets updated accordingly.

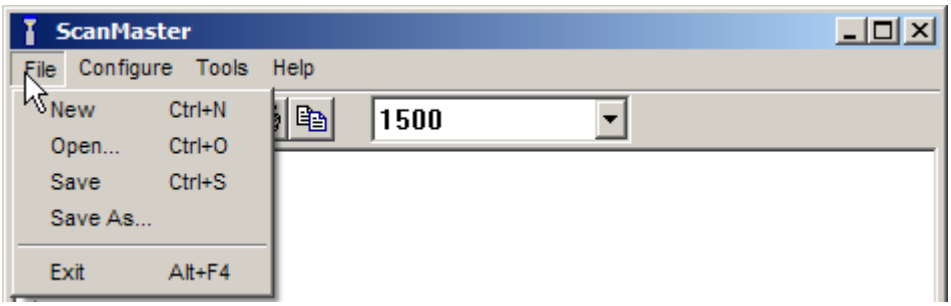


MENU BAR

The menu bar contains a number of menus that cause the program to take actions. Each menu contains a list of commands. Some of the options carry out commands immediately while others display their windows to which you input information further. If a submenu is labeled with an ellipsis [...], it displays a window that requires your further configuration when it is selected; otherwise it deals with a command that causes an action to be carried out immediately.

FILE MENU

The File Menu contains the commands that produce the actions as tabulated below:



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

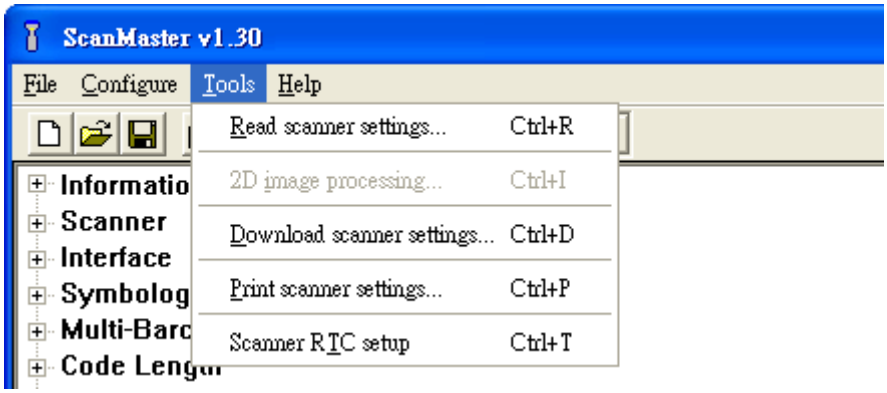
CONFIGURE MENU

The Configure Menu contains one command that displays the [Scanner Settings] dialog box that accesses the settings as tabulated below:

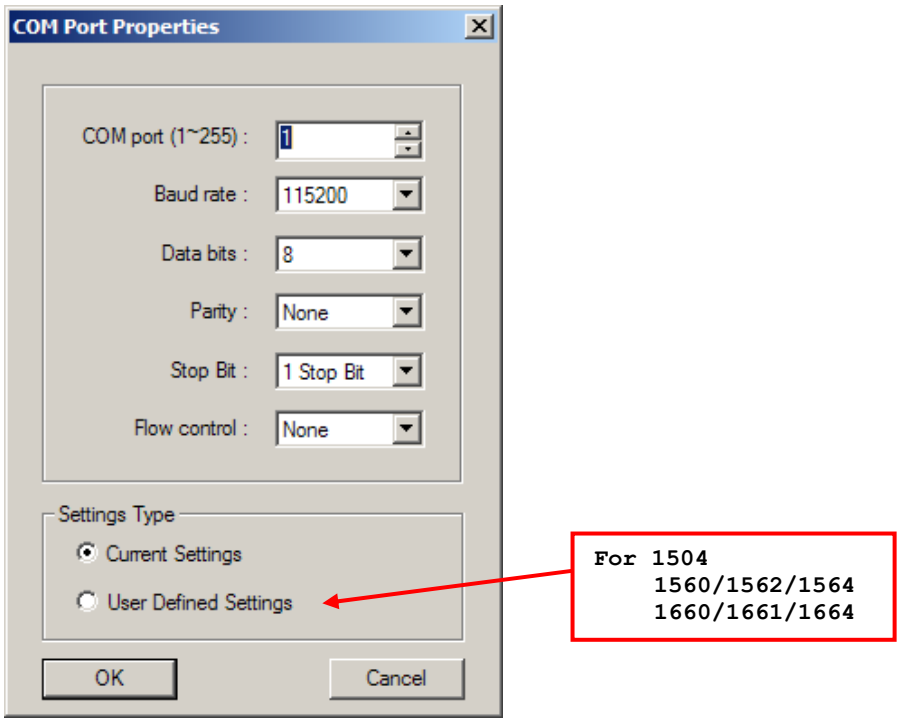
Command	Action
Configure Scanner	Configures the current settings for the target scanner. Refer to the following sections – ▸ Chapter 1 – Changing Scanner Settings ▸ Chapter 2 – Selecting Output Interface ▸ Chapter 3 – Changing Symbology Settings ▸ Chapter 4 – Defining Output Format ▸ Chapter 5 – Applying Editing Formats

TOOLS MENU

The Tools Menu contains the submenus that launch the actions as tabulated below:

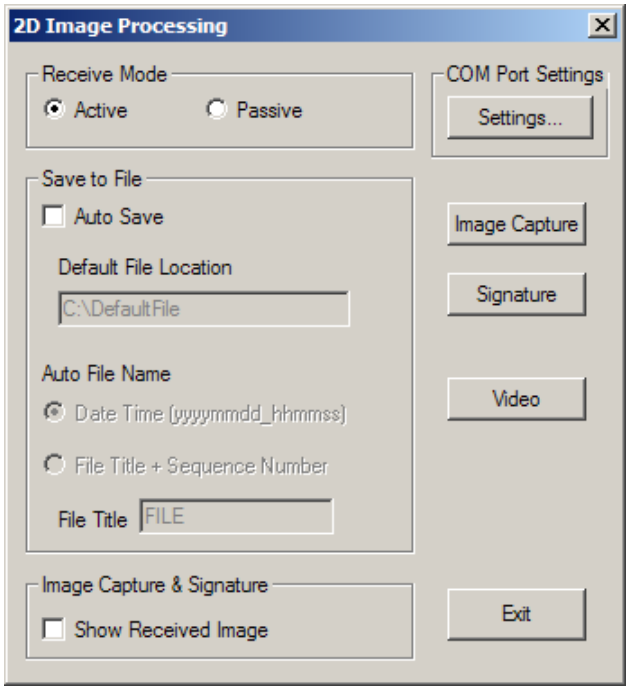
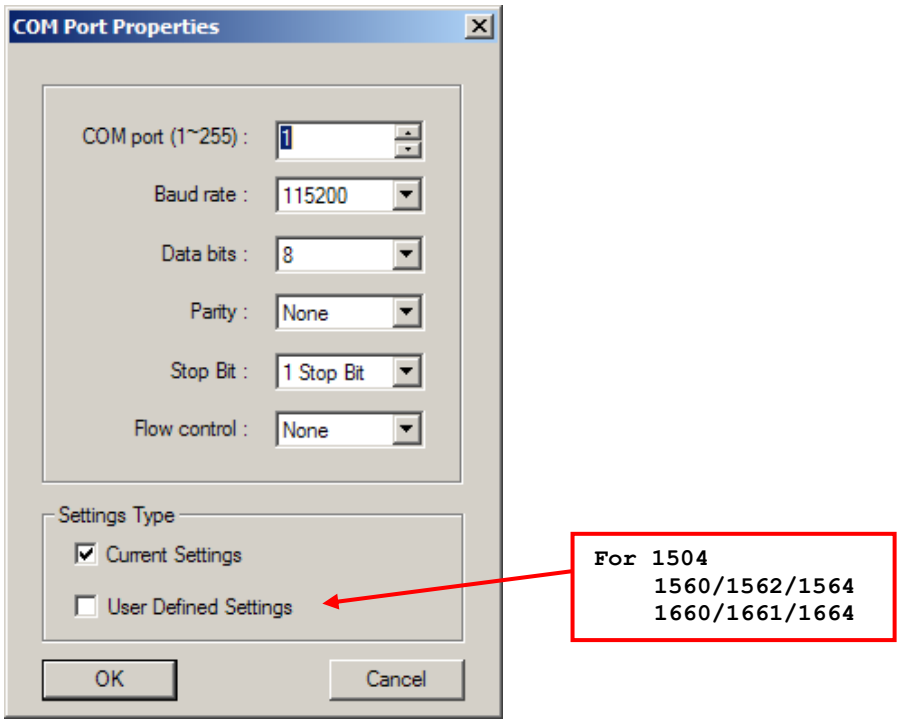


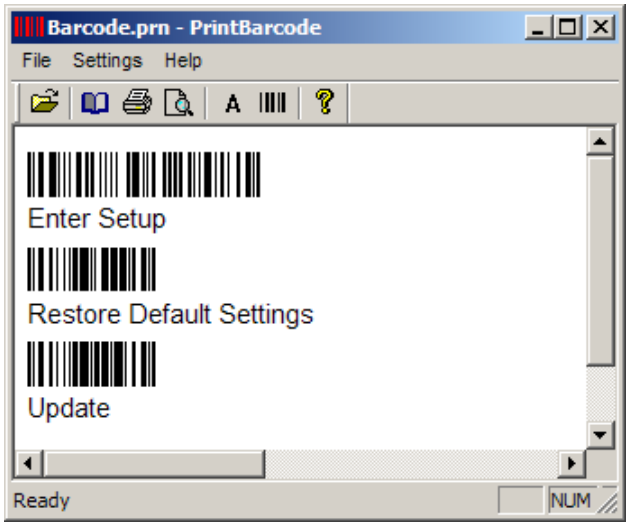
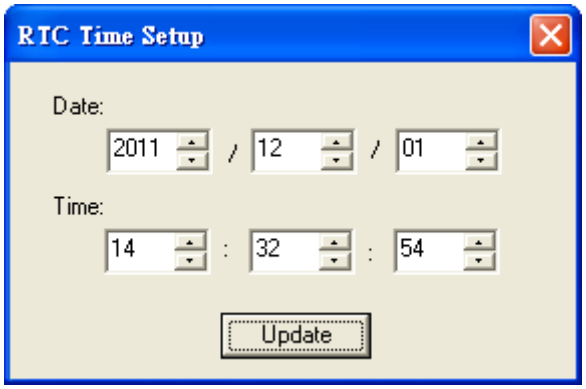
Command	Action
Read Scanner Settings	Displays [COM Port Properties] dialog box that enables users to fetch the settings applied on the scanner at the moment. For 1504, 1560, 1562, 1564, 1660, 1661 and 1664, it supports to fetch user's defined settings (= "User Defaults").



- 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.

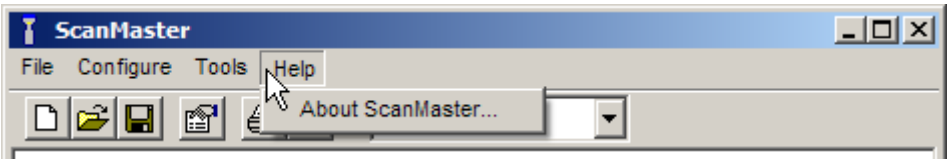
Note: To clone settings, first read settings from a specific scanner, and then send the settings to other scanners.

2D Image Processing	 Refer to 1.13 2D Decode Settings (1704) and Appendix I — 2D Image Processing (1704 Only).
Download Scanner Settings	Displays the [COM Port Properties] dialog box that enable users to send the settings made in the ScanMaster to the target scanner when the scanner is connected to your PC via RS-232 or Virtual COM (Bluetooth SPP or USB VCOM). For 1504, 1560, 1562, 1564, 1660, 1661, and 1664, it supports sending the settings to the scanner as "User Defaults". 

	▸ 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.
Print Scanner Settings	Runs PrintBarcode.exe to print out the Setup Barcodes based on the settings made in the ScanMaster which are automatically saved in the Barcode.prn file.  If the scanner is not connected to the host computer via RS-232 or Virtual COM (Bluetooth SPP or USB VCOM), scanner configuration can be changed by scanning the setup barcodes. ▸ The setup barcodes are categorized into groups of related settings.
RTC Time Setup	Sets clock / calendar time for the 1664 scanner to affix date/time stamps to scanned barcodes. See also 5.3 Date & Time Stamp (1664). 

HELP MENU

The Help Menu contains the command "About ScanMaster".



Command	Action
About ScanMaster	Provides the information about the version, copyright and developer of the ScanMaster.

TOOLBAR

The toolbar enables the quick access to most of the commands with the following buttons:

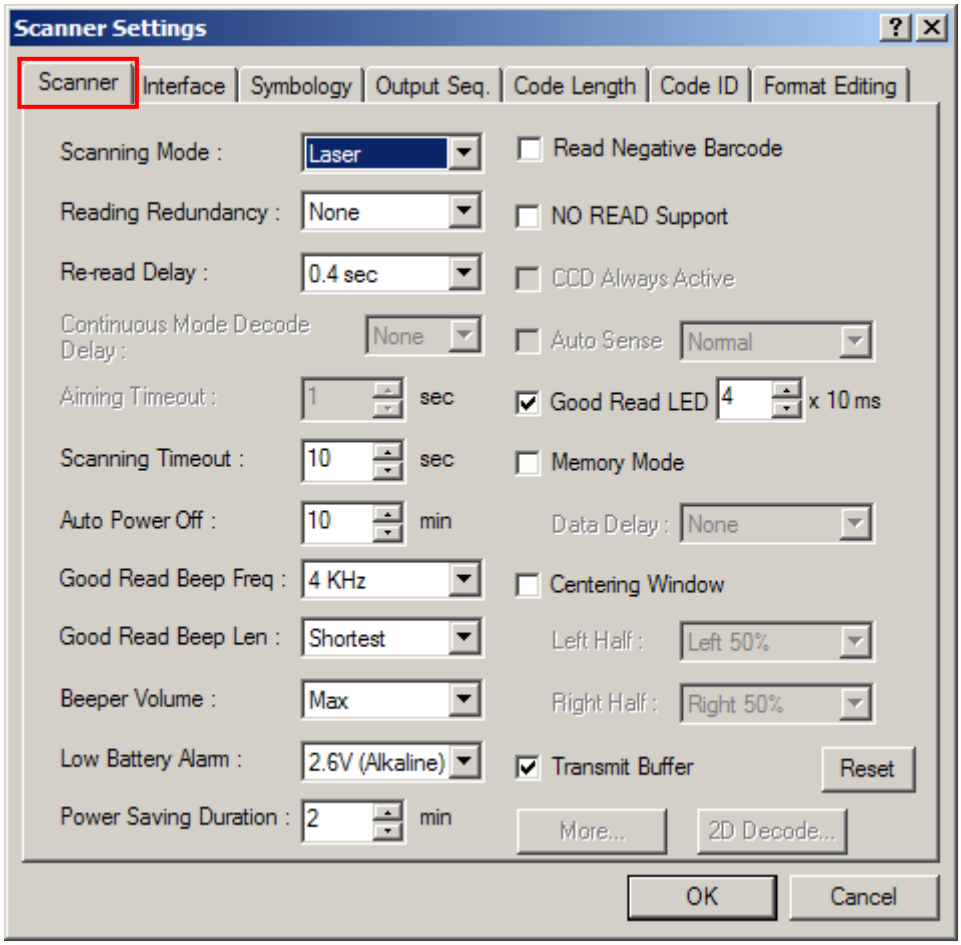
From left to right, the buttons invoke the following commands:	
	New
	Open
	Save
	Configure
	Print
	Download Settings
	Select among the scanners – 1070, 1500, 1502, 1504, 1560, 1562, 1564, 1660, 1661, 1664, 1704

Chapter 1

CHANGING SCANNER SETTINGS

The [Scanner Settings] dialog box features a number of tabbed property pages which enable your configuration to the barcode scanner that optimizes your application.

Note: The options available slightly differ from model to model. For example, "Low Battery Alarm" is provided for 1560/1562/1564/1660/1661/1664 only.



IN THIS CHAPTER

1.1 SCAN MODE

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

- 1504: When set to any scan mode other than Multi-Barcode Mode, the scanner only accepts barcode that contains data of maximum 10 KB.
- 1564: The scanner only accepts barcode that contains data of maximum 7 KB.
- 1704: When set to any scan mode other than Multi-Barcode Mode, the scanner only accepts barcode that contains data of maximum 4084 bytes.

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

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

Continuous Mode

The scanner is always scanning.

- To decode the same barcode repeatedly, shift the scan beam away and target on 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 scanning is activated as long as the trigger is pulled down.

- The scanning won't get deactivate 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".

Alternate Mode

The scanner will start scanning once the trigger is pressed.

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

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

For the 2D scanners to decode multiple unique barcodes, the maximum output data length of all the barcodes is 10 KB (1504/1564/1664) and 2042 bytes (1704) after configuration. When the output length exceeds the maximum length allowed, Multi-Barcode Mode will not take effect.

- 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.

Presentation Mode (1504, 1564 and 1704 only)

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 scan mode –

- 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 scan mode —

- 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 property tab. You may like to enforce redundant reading (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 (1560/1562/1564/1660/1661/1664)

The Bluetooth-enabled models such as 1560, 1562, 1564, 1660, 1661, and 1664 feature the management of power consumption. Such management enables the scanner to control its power state in response to the input from the user. By the scanner's power management, the power consumption goes through the following transition:

1) The scanner stays active with full CPU speed right after power-on.
2) The scanner shifts to low CPU speed. ("Power-Saving". See 1.2.2 Power-Saving)
3) The scanner finally shuts down. ("Auto Power Off". See 1.2.3 Auto Power Off & 1.2.4 Auto Power off Ignoring Scan Mode (1560/1564).

Note there are a few eccentric cases:

- The "Power-Saving" is inoperative for the Bluetooth HID or SPP on all concerned models except for 1664. The 1664 is able to deliver Power-Saving for Bluetooth HID and SPP.
- For the 1661 and 1664 set to Direct USB for output, the "Power-Saving" and "Auto Power Off" only comes to service when the USB cable gets loosened or connects improperly.

1.2.1 BEFORE/AFTER BLUETOOTH CONNECTION

Before and after the Bluetooth connection is made, the scanner features similar power managing mechanism. The following details how it is achieved.

Before establishing a WPAN connection successfully...

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

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

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

   (c) trying to connect to 3656 or 3610

   Note in the cases of (a) and (b), you may need to search for the scanner again on your computer.

2. If the scanner fails to connect throughout the active time (2 minutes by default), the CPU slows down and the scanner becomes inactive to save power. The LED starts to blink red (On/Off ratio 0.3 s: 2.5 s).

   Pull the scan trigger or press the scan button to resume the scanner.

3. Failing to make connection, the scanner shifts to inactive state when it is the time (the Power-Saving time). Then scanner keeps inactive and finally turns off to conserve battery power when it is the time (the Auto Power Off time).

   Pull & hold the scan trigger or press & hold the [Power/Delete] button to turn the scanner back on.

After establishing a WPAN connection successfully...

1. Once a WPAN connection is established successfully, the scanner stays active for a time (2 minutes by default) for data transmission. The CPU runs at full speed, and the LED blinks blue (On/Off ratio 0.02 s: 3 s).
2. If the scanner is left idle throughout the active time (2 minutes by default), the scanner shifts to inactive state to save power. The CPU runs at low speed, and the LED blinks red (On/Off ratio 0.3 s: 2.5 s).

   Press and hold the [Trigger] button to recover the scanner's activity.

   - There is no transition from full CPU speed to low CPU speed for Bluetooth HID and SPP, however when the connection is based on a 3656 or 3610, the scanner will go through a low CPU speed stage in order to save power.
   - 1664 is an exception from the said behavior. The 1664 goes through low CPU speed to save power for Bluetooth HID and SPP
3. Being left idle, the scanner shifts to inactive state when it is the time (the Power-saving time). Then the scanner keeps inactive and finally turns off with three short beeps, tone descending from high to low, when it is the time (the Auto Power Off time).

   Press & hold the [Power/Delete] button to turn the scanner back on. When the scanner re-powers on, it attempts reconnecting to the host:

   - For Bluetooth HID, the scanner resumes connection with the host upon powering on again as long as the host application is still running. You will hear three short beeps, tone ascending from low to high. If the scanner fails to resume the connection, it tries every 5 seconds unless the scanner reads the "Reset Connection" barcode.
   - For Bluetooth SPP Slave Mode, the scanner must wait for the host to re-connect.
   - For Bluetooth SPP Master Mode, the scanner resumes the connection with the host upon powering on again as long as the host application is running. You will hear three short beeps, tone ascending from low to high. If the scanner fails to resume the connection, it tries every 5 seconds unless the scanner read the "Reset Connection" or "Restore System Defaults" barcode.
   - Interfacing with 3656 or 3610, the scanner tries re-connecting to 3656 or 3610 unless you turn off the scanner.

1.2.2 POWER-SAVING

"Power-Saving" is provided for all scan modes. Set up a time (1~254 min.; 0= disable) after power-on for the scanner to enter low-speed mode to save power. By default, the scanner keeps active for 2 minutes after power-on and before entering low-speed power-saving.

Note either of the following cases will set the Power-Saving inefficacious:

1) the interface is Bluetooth HID or SPP

   (the 1664 is an exception to feature Power-Saving as usual),

2) the scan mode is set to Test, Continuous or Alternate Mode,

3) 1560/1564 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 AUTO POWER OFF

The setup of an "Auto Power Off" time is available to any scan mode other than Continuous Mode, Test Mode and Alternate Mode.

Select "Auto Power Off" and assign a time (1~254 min.; 0= disable) for the scanner that is set to none of the above mentioned modes to automatically shut down after power-on. The default value is set to 10 minutes, which means the scanner automatically shuts down 10 minutes after power-on by default.

Note: For 1560 and 1564, when they are set to Auto-Sense mode and seated in the Auto-Sense Stand, "Auto Power Off" won't work.

1.2.4 AUTO POWER OFF IGNORING SCAN MODE (1560/1564)

"Auto Power Off Ignoring Scan Mode" is provided for Continuous Mode, Test Mode and Alternate Mode only.

Select "Auto Power Off Ignoring Scan Mode" and assign a time (1~254 min.; 0= disable) to force a scanner set to any of the above mentioned modes to automatically shut down at the assigned time after power-on.

The default value is set to 10 minutes, which means the scanner automatically shuts down 10 minutes after power-on by default.

1.2.5 LOW BATTERY ALARM

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

- For 1660, "Enable (Alkaline)" is selected for low battery level by default. If you are using Ni-MH batteries, select "Enable (Ni-MH)".

1.3 STATUS INDICATOR

For 1704, refer to 1.12 More Settings for Good Read Vibrator.

1.3.1 BEEPER VOLUME

Beeping functions to alert users of various states of the scanner, 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. However, 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 CCD ALWAYS ACTIVE (1560 ONLY)

This feature intends to keep the CCD sensor always active so that the scanner can decode more efficiently.

Note: For the 1500 scanner, the CCD sensor is set to “Always Active” and isn’t subject to change.

1.7 AUTO SENSE (1500/1560/1564)

This mode is only applicable when you want to seat the 1500/1560/1564 scanner in the Auto-Sense Stand. The scanner will be scanning as long as it is seated in the Auto-Sense Stand, as shown below. Whenever a barcode is brought within the coverage, 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 of 1500/1560.

Warning: When you disable this mode later, proceed to select a scan mode best suits your application.

Note: For Auto-Sense mode to work for 1560/1564, you must connect (1) the power supply cord and (2) the interface cable to the Auto-Sense Stand.

1.8 MEMORY MODE (1560/1562/1564/1660/1661/1664)

Memory mode is disabled by default. When the scanner is in memory mode, it means any connection established with host is disabled.

The scanner keeps flash memory for memory mode operation.

- 1560/1562/1661:512 KB
- 1564/1664: 4 MB
- 1660: 256 KB

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

1.8.1 DATA DELAY

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

1.8.2 SEND DATA & CLEAR MEMORY

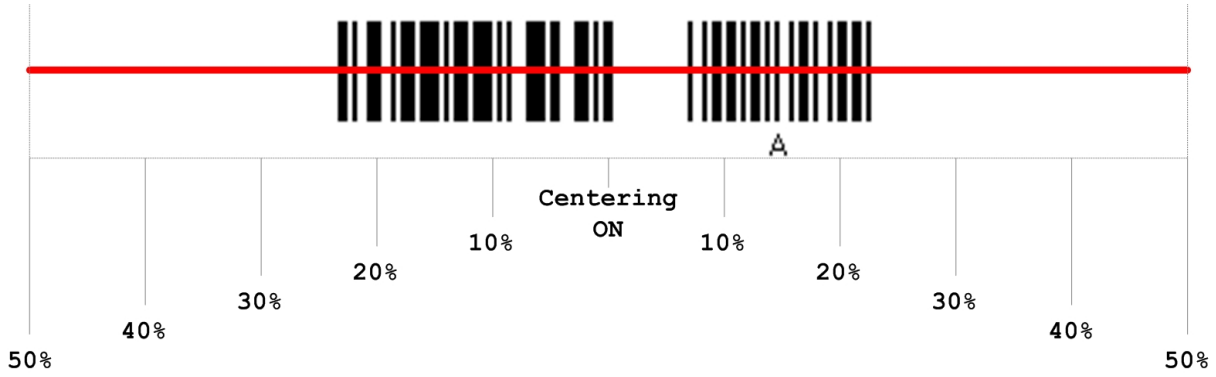
When flash memory is run out, the scanner will respond with two short beeps (high-low tone) as a warning. You are advised to send data to the server immediately by having the scanner read the setup barcodes. Refer to a separate manual.

- For 1560/1562/1564/1660/1664, the scanner will resume the previous WPAN connection with the host computer temporarily.
- For 1661 and 1664, the scanner can send data via "Direct USB" interface when the cable is connected. Otherwise, it will resume the previous WPAN connection with the host computer temporarily. When you connect the cable in Memory Mode, the scanner is set to the output interface of "Direct USB Virtual COM" by default. Refer to 2.9.3 Secondary Interface for 1661.

Unless you erase the memory by having the scanner read two setup barcodes – "Clear Data" and "Confirm", the flash memory won't be cleared up even if the data is sent to the host computer.

1.9 EFFECTIVE DECODING AREA

In default state, 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 "Centering Window" and 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.



1.10 TRANSMIT BUFFER (1560/1562/1564/1660/1661/1664)

By default, transmit buffer is enabled and ready for use when the scanner is carried out of the effective Bluetooth range. Upon reading a barcode successfully within the effective 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 the effective range.

- For 1560/1562 with 4 KB transmit buffer, the scanner can ignore the transmission status and keep on reading barcodes until the buffer is full.
- For 1564 and 1664 with 10 KB transmit buffer, the scanner can ignore the transmission status and keep on reading barcodes until the buffer is full.
- For 1660/1661 with 1 KB transmit buffer, the scanner can ignore the transmission status and keep on reading barcodes until the buffer is full.

When transmit buffer is enabled...

When the scanner is carried out of Bluetooth coverage, it will respond with two short beeps, high-low tone, upon reading a barcode successfully.

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

When transmit buffer is disabled...

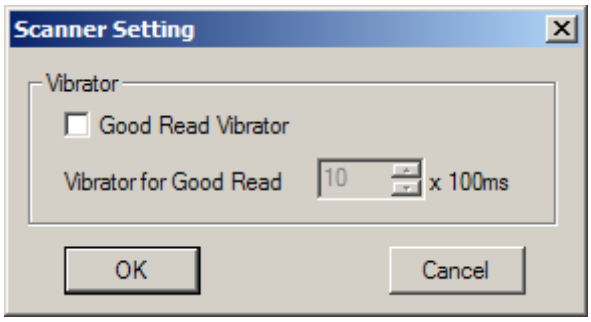
When the scanner is carried out of the coverage, it will respond with one long beep (low tone) and its LED indicator will become solid red and go off quickly. You are advised to back in the coverage.

1.11 PICKLIST MODE (1504/1564/1664/1704)

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.

1.12 MORE SETTINGS (1664/1704)

For 1664 and 1704, the scanner is equipped with a vibrator. You may enable it for the annunciator of Good Read. When enabled, it vibrates for 1 second. Specify a value, ranging from 1 to 254 in units of 100 milliseconds.



1.13 2D DECODE SETTINGS (1704)

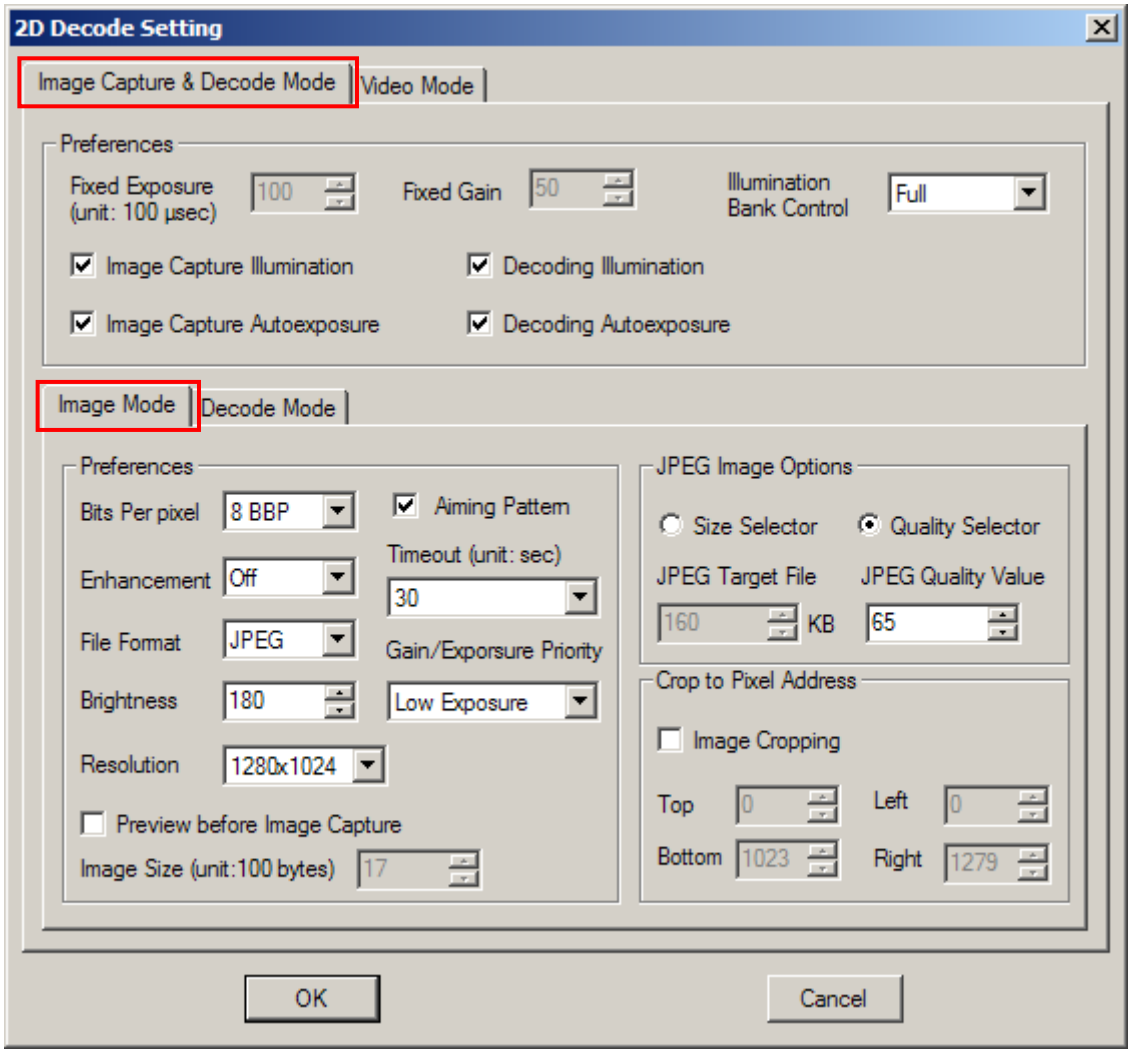
1704 supports different scan modes and signature capture in Decode Mode. Two more operation modes are supported, which are Image Mode and Video Mode. Image capture occurs in all modes of operation, and it requires software applications, such as *ScanMaster*, to capture and download images to PC for decoding. Please refer to separate manual for OCX programming support.

For 1704, go to **Tools Menu | 2D Image Processing** to start with the retrieval of signature, image or video. Both active and passive modes are supported. Refer to Tools Menu and Appendix I — 2D Image Processing (1704 Only).

- Active Mode: Control the scanner from the software on the host.
- Passive Mode: Have the scanner read the setup barcodes for the desired operation.

Note: For signature capture in Decode Mode, Image Mode and Video Mode, the output interface must be RS-232 or USB Virtual COM.

1.13.1 IMAGE MODE



Note: When selecting Image Mode, you can ignore the Decoding Illumination/Auto-exposure settings in [Preferences] group box.

Fixed Exposure

When autoexposure is disabled, specify the exposure time (2~5000), in unit of 100 µs. By default, it is set to 100.

Fixed Gain

For 1704, deselect the "Decoding Autoexposure" to make the "Fixed Gain" setting available. Once available, it is set to 50 by default. Assign a value from 1 to 100.

For 1504, 1564 and 1664, the "Decoding Autoexposure" is selected (enabled), and isn't subject to change. The "Fixed Gain" isn't available.

Illumination Bank Control

This is used to control the illumination banks on the scan engine. Options are –

- Full: Enables the full illumination system.
- Auto: Switches the illumination from left to right bank.
- Left: Enables the left bank, which is on the left when facing the scan window.
- Right: Enables the right bank, which is on the right when facing the scan window.

Note: When the ambient light is too dim on the left (or right), you may enable the left (or right) illumination bank to add lighting.

Image Capture 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.

Image Capture Autoexposure

Decide whether to manually specify the gain and exposure time (only recommended for advanced users with difficult image capture situations). By default, exposure value is set to 10 ms and gain value is set to 50 when autoexposure is disabled.

Bits per Pixel

Select the number of significant bits per pixel (BPP) to use when capturing an image. Select 1 BPP for a black and white image, 4 BPP to assign 1 of 16 levels of grey to each pixel, or 8 BPP to assign 1 of 256 levels of grey to each pixel. By default, it is set to 8 BPP. The decoder ignores these settings for JPEG files, which always use 8 BPP.

Resolution

This feature alters image resolution before compression. Multiple pixels are combined to one pixel, resulting in a smaller image containing the original content with reduced resolution.

Options for 1704:

- Full: 1280 x 1024 (uncropped image size)
- 1/2: 640 x 512 (uncropped image size)
- 1/4: 320 x 160 (uncropped image size)

Enhancement

This feature uses a combination of edge sharpening and contrast enhancement to produce an image that is visually pleasing.

File Format

Select an image format for storing captured images. By default, it is set to JPEG.

Brightness (Target White)

Decide whether to set the Target White value (1~240) when using autoexposure. White and black are defined as 255 decimal and 0, respectively. If the value is 180, which is the factory default, the white level of the image is ~180.

Aiming Pattern

Decide whether to allow the decoder to project the aiming pattern in Image Mode.

Timeout

Set the amount of time the decoder remains in Image Mode. The decoder exits Image Mode upon a trigger event, or when the Image Mode Timeout elapses. By default, the time-out value is set to 30 seconds.

Gain/Exposure Priority

Alter the decoder's gain/exposure priority when it acquires an image in Image Mode with auto exposure enabled.

- Low Gain Priority: The decoder favors longer exposure time rather than higher gain to capture an image. This ensures that the image is less noisy and produces fewer artifacts during post-processing activities like image enhancement (sharpening). This mode is ideal for fixed mount/fixed object image capture since the image acquired is susceptible to motion blur.
- Low Exposure Priority: The decoder favors higher gain over exposure to capture an image. This results in an image that is less susceptible to motion blur at the expense of noise artifacts. However, for most applications, the amount of noise is acceptable.

Preview before Image Capture

Decide whether to enable Image Mode with View Finder, which the decoder behaves as a video camera until a trigger event is activated.

- Select the number of 100-byte blocks. Values range from 800 to 3000 bytes. Selecting a smaller value transmits more frames per second; selecting a larger value increases video quality. By default, it is set to 1700 bytes.

JPEG Image Options

Optimize JPEG images for either size or quality.

- JPEG Target File Size: Specify the target JPEG file size in terms of 1 Kilobytes (1024 bytes). By default, it is set to 160 Kilobytes
- JPEG Quality: Specify the JPEG quality value (5~100). By default, it is set to 65.

Crop to Pixel Address

This is used to crop a captured image to the pixel addresses specified. When no cropping, it presents the full 1280 x 1024 pixels for 1704.

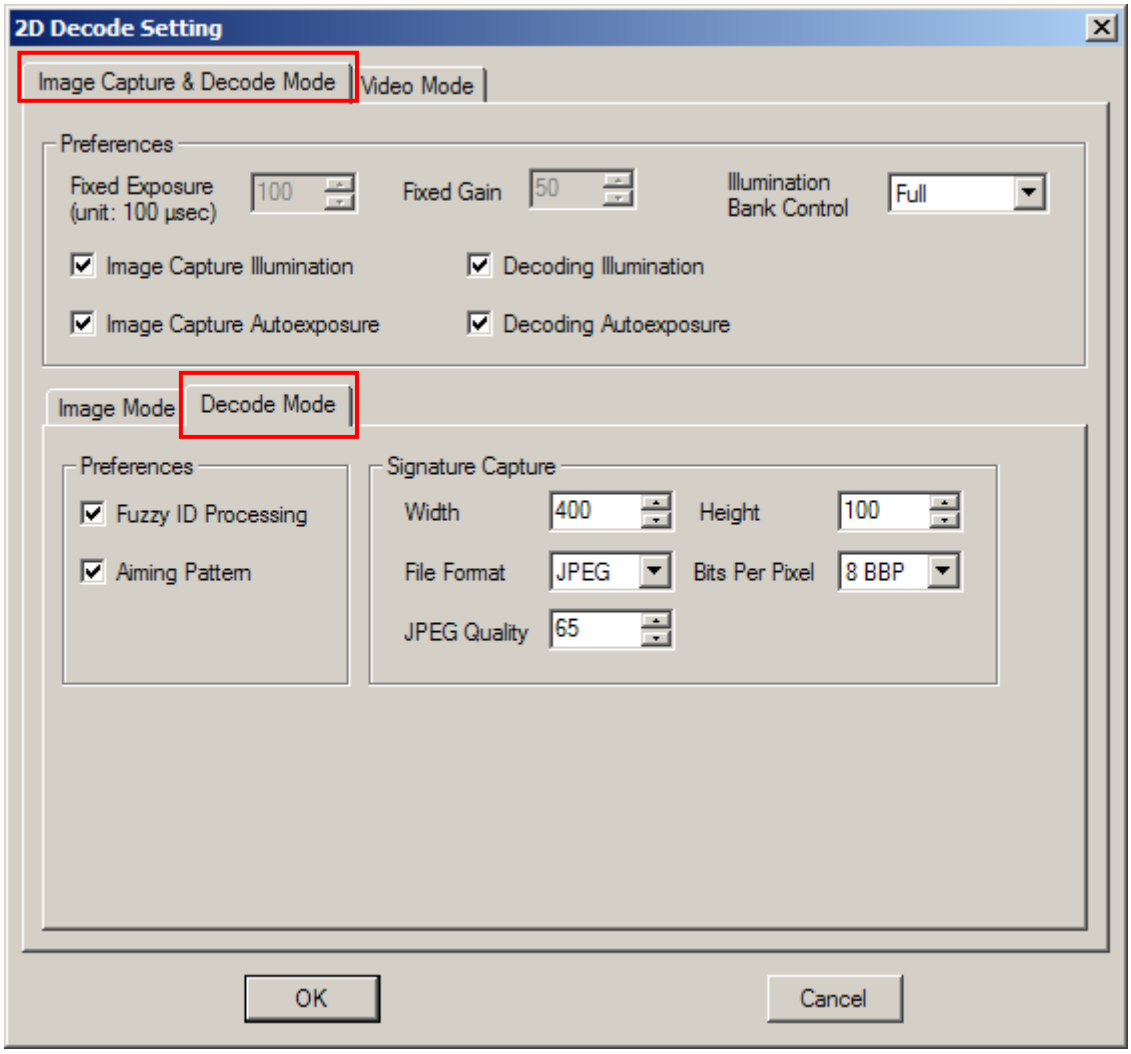
- For image cropping on 1704, set the pixel addresses from (0,0) to (1279, 1023) to crop to. Columns are numbered from 0 to 1279, rows from 0 to 1023. Specify four values for Top, Left, Bottom, and Right, where Top and Bottom correspond to row pixel addresses, and Left and Right correspond to column pixel addresses. For example, for a 4 row x 8 column image in the extreme bottom-right section of the image, set the following values:

  Top = 1020, Bottom = 1023, Left = 1272, Right = 1279

Note: The scanner has a cropping resolution of 4 pixels. Setting the cropping area to less than 3 pixels transfers the entire image.

1.13.2 DECODE MODE

By default, this is the normal operation mode. The decoder attempts to locate and decode any barcode within its field of view upon a trigger event. Refer to 1.1 Scan Mode.



Note: When selecting Decode Mode, the Image Capture Illumination/Auto-exposure settings in [Preferences] group box can be ignored.

Fixed Exposure

When autoexposure is disabled, specify the exposure time (2~5000), in unit of 100 µs. By default, it is set to 100.

Fixed Gain

For 1704, deselect the "Decoding Autoexposure" to make the "Fixed Gain" setting available. Once available, it is set to 50 by default. Assign a value from 1 to 100.

For 1504, 1564 and 1664, the "Decoding Autoexposure" is selected (enabled), and isn't subject to change. The "Fixed Gain" isn't available.

Illumination Bank Control

This is used to control the illumination banks on the scan engine. Options are –

- Full: Enables the full illumination system.

- Auto: Switches the illumination from left to right bank.
- Left: Enables the left bank, which is on the left when facing the scan window.
- Right: Enables the right bank, which is on the right when facing the scan window.

Note: When the ambient light is too dim on the left (or right), you may enable the left (or right) illumination bank to add lighting.

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.

Decoding Autoexposure

Decide whether to manually specify the gain and exposure time (only recommended for advanced users with difficult image capture situations). By default, exposure value is set to 10 ms and gain value is set to 50 when autoexposure is disabled.

For 1504, 1564, and 1664, Decoding Autoexposure is selected (enabled) and isn't subject to change.

Fuzzy 1D Processing

By default, this option optimizes decode performance on 1D barcodes, including damaged and poor quality barcodes. Disable this only if you experience time delays when decoding 2D barcodes, or in detecting a no decode.

Aiming Pattern

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

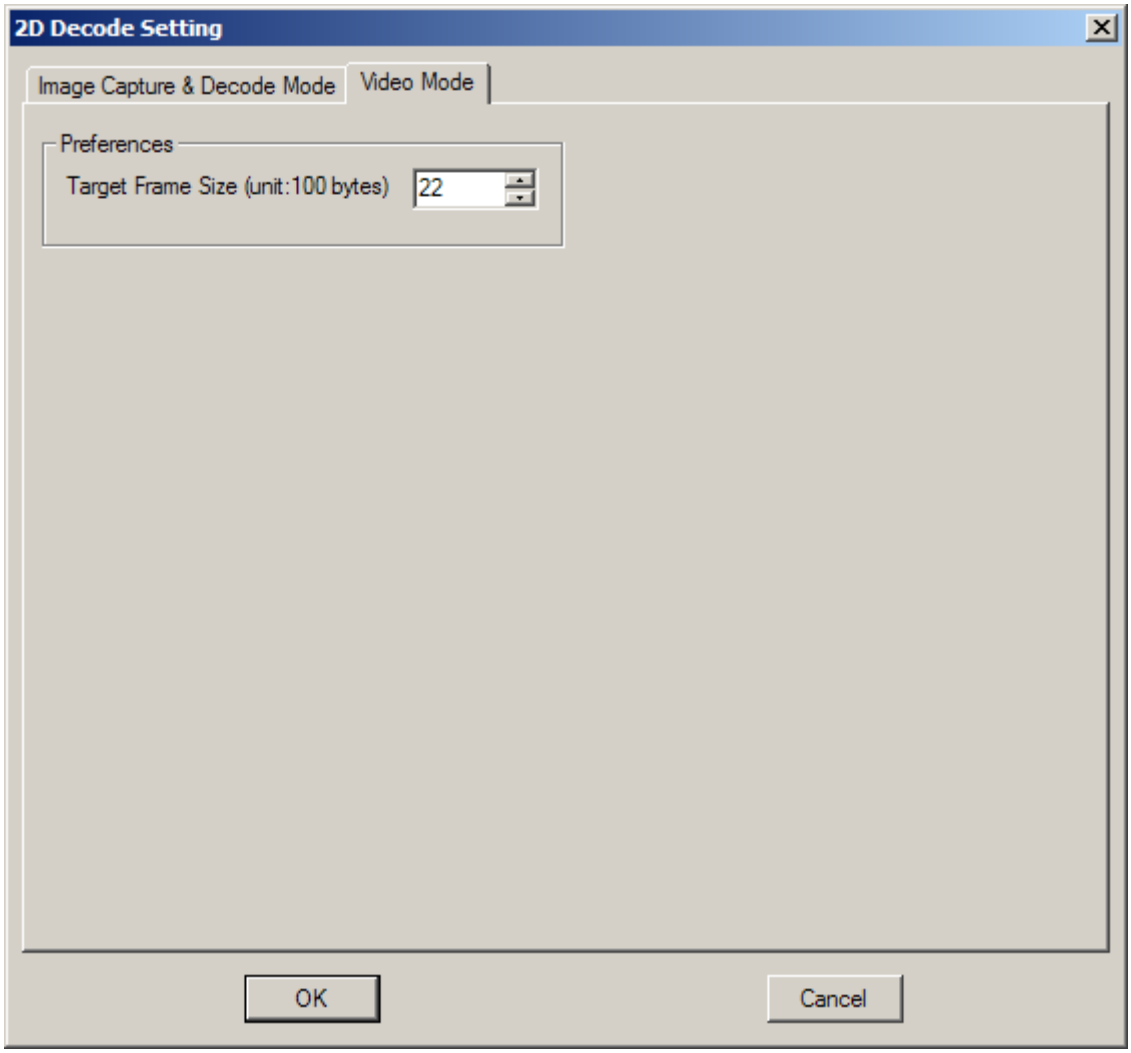
Signature Capture

A signature capture barcode is a special-purpose symbology, which delineate a signature capture area in a document with a machine-readable format. The recognition pattern is variable so it can optionally provide an index to various signatures. The region inside the barcode pattern is considered the signature capture area.

Go to Tools Menu | 2D Image Processing to allow the decoder to capture signature in Decode Mode. Refer to Tools Menu.

- Width (1~640) & Height (1~480): The aspect ratio of the Signature Capture Width and Signature Capture Height parameters must match that of the signature capture area. For example a 4 x 1 inch signature capture area would require a 4 to 1 aspect ratio of width to height. By default, it is set to 400 and 100 respectively.
- File Format: Select an image format for storing captured signatures. By default, it is set to JPEG.
- Bits per Pixel: Select the number of significant bits per pixel (BPP) to use when capturing a signature. Select 1 BPP for a black and white image, 4 BPP to assign 1 of 16 levels of grey to each pixel, or 8 BPP to assign 1 of 256 levels of grey to each pixel. By default, it is set to 8 BPP. The decoder ignores these settings for JPEG files, which always use 8 BPP.
- JPEG Quality: Specify the JPEG quality value (5~100). By default, it is set to 65.

1.13.3 VIDEO MODE



Target Video Frame Size

Select the number of 100-byte blocks to transmit per second. Values range from 800 to 3300 bytes. Selecting a smaller value transmits more frames per second but reduces video quality; selecting a larger value increases video quality but slows transmission. By default, it is set to 2200 bytes.

1.14 PAGER BEEP (1664)

This function helps track down the 1664 scanner should it be misplaced or fall out of sight. The Pager Beep relies on a host computer such as your Windows-based PC, smartphone, or tablet to initiate some Bluetooth-based action to make the lost property beep so it becomes noticeable.

In default state, the Pager Beep parameter is set to 5, which means Pager Beep is enabled and between each beep are five seconds.

In the Pager Beep Duration spin box, set a number between 0 and 15. "0" will disable the Pager Beep while the other numbers set the second(s) between each beep. (0~15 configurable, 0=disable)

The following describes what to do on different host computers to trace the 1664 scanner:

1.14.1 WINDOWS-BASED PC

When the host is a Windows-based PC, the transmission interfaces supported are Bluetooth HID and Bluetooth SPP. Deviated from other 1-series Bluetooth-based models, the 1664 scanner is able to deliver Power-Saving service for Bluetooth HID and SPP.

However the Pager Beep only comes to the rescue when the 1664 sits in low-speed Power-Saving mode (see 1.2.2 Power-Saving). Hence a well provided Auto-Power Off time is necessary for the Pager Beep to work because it isn't possible once the scanner powers off. (See also 1.2.3 Auto Power Off.)

The following describes what to do to locate the scanner for different interfaces:

BLUETOOTH HID

When it is the Bluetooth HID that interfaces the 1664 scanner, press either "Scroll Lock", "Num Lock", or "Caps Lock" on the PC's keyboard to revive the scanner afar. The scanner will respond with 2 short beeps on a regular time basis (every 5 seconds by default) and won't stop until either of the following happens:

1) The scan button or power button is pressed.
2) It is the defined time for Power-Saving again. (The scanner returns to power-saving.)

Note: Only Windows PC's keyboards are supported currently.

BLUETOOTH SPP

When it is the Bluetooth SPP that interfaces the 1664 scanner, initiate any Bluetooth-based data transmission on the host computer by way of serial ports. The scanner will recover the activity and respond with 2 short beeps on a regular time basis (every 5 seconds by default) and won't stop until either of the following happens:

1) The scan button or the power button is pressed.

2) It is the defined time for Power-Saving again. (The scanner returns to power-saving.)

1.14.2 SMART HANDHELD

Whether it is a smartphone or an ultra portable tablet PC, as long as it is paired and stays connected with the lost 1664, either disconnection or reconnection from your smart handheld will reactivate the scanner afar. The scanner will respond with 2 short beeps on a regular time basis (every 5 seconds by default) and won't stop until either of the following happens:

1) The scan button or the power button is pressed.

2) It is the defined time for Power-Saving again. (The scanner returns to power-saving.)

Note it has to be the scanner's last Bluetooth-connected device to be able to resume the scanner through disconnection/reconnection.

Chapter 2

SELECTING OUTPUT INTERFACE

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

1) Turn off your computer or laptop.

2) Connect the scanner and your computer with the provided interface cable.

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

   - If you are connecting the scanner to the USB port of the host computer via USB HID cable (part # 307), refer to 2.1 Keyboard Wedge for related settings.
   - If you are connecting the scanner to the USB port of the host computer via USB Virtual COM cable (part # 308), refer to 2.2 RS-232 related settings.
   - If you are connecting the scanner to the IBM POS 4683/4694 via the converter cable (part # 346), refer to 2.1 Keyboard Wedge for related settings.

Scanner	Output Interface	
1070	(1) (2)	Keyboard Wedge if using the "Y-shaped" cable USB HID if using USB cable
1500/1502	Default: Keyboard Wedge	
1560/1562/1564	Default: Bluetooth HID	
1660/1661/1664	Default: Bluetooth HID	
1504	Capable of detecting the interface	
1704	Capable of detecting the interface	
1560/1562 via 3656	Default: USB HID	
1660 via 3610	Default: USB HID	
1661 via 3610	(1) (2)	Default: USB HID Default: Direct USB Virtual COM if using the "Direct" USB cable in Memory Mode
1664 via 3610	(1) (2)	Default: USB HID Default: Direct USB Virtual COM if using the "Direct" USB cable in Memory Mode

Note: If a different interface is desired, change the interface setting and send it to the scanner.

3) Turn on your computer or laptop.

   - For 1560/1562/1564 scanners, install the battery and hold down the trigger for 2 seconds to turn it on. They also support the output by the RS-232 or Keyboard Wedge cable via 3656.

- For 1660/1661/1664 scanners, install batteries, and press & hold the [Power/Delete] key to turn it on.

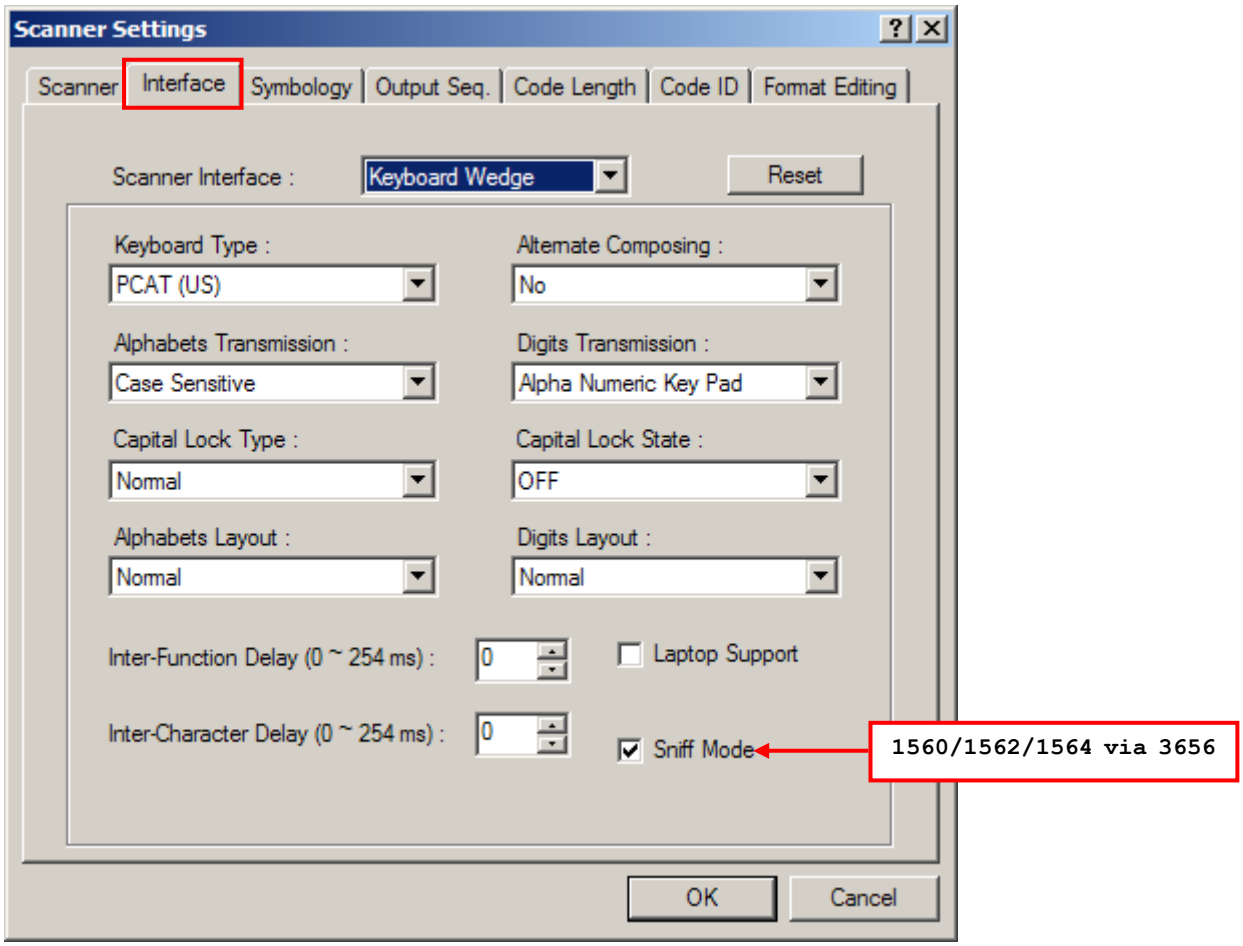
IN THIS CHAPTER

2.1 KEYBOARD WEDGE

This interface is for the following scanners:

- 1070/1500/1502/1504/1704
- 1560/1562/1564 (via 3656)

Use a "Y-shaped" keyboard wedge cable to connect between the scanners (models 1070/1500/1502/1504/1704 or 3656), the host computer, and the keyboard. The scanned data will be transmitted to the host computer through the 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 –

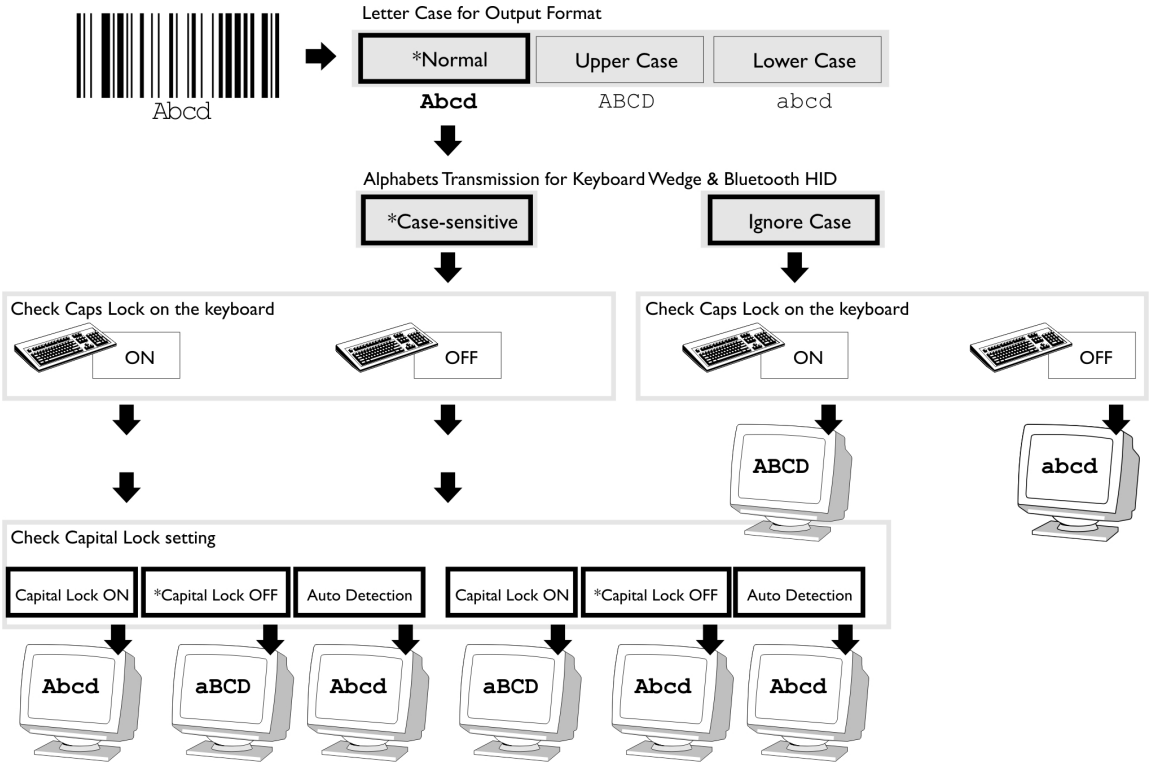
No.	Keyboard Type	No.	Keyboard Type
1	PCAT (US)	16	PS55 001-2
2	PCAT (French)	17	PS55 001-82
3	PCAT (German)	18	PS55 001-3
4	PCAT (Italian)	19	PS55 001-8A
5	PCAT (Swedish)	20	PS55 002-1, 003-1
6	PCAT (Norwegian)	21	PS55 002-81, 003-81
7	PCAT (UK)	22	PS55 002-2, 003-2
8	PCAT (Belgium)	23	PS55 002-82, 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)
		31	PCAT (Hungarian)

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.

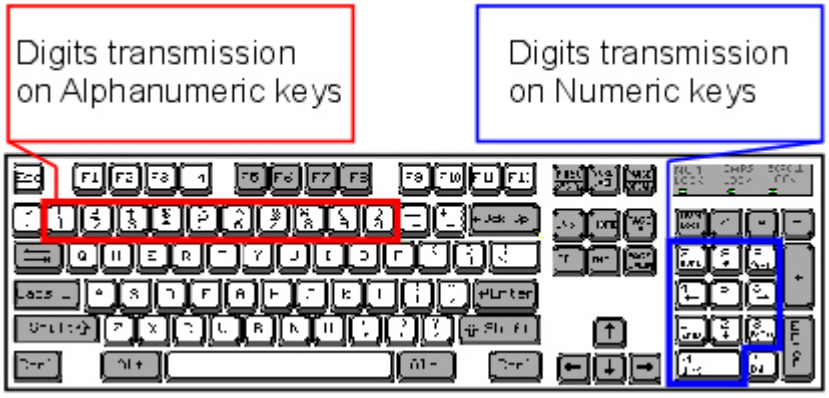
2.1.3 ALPHABETS TRANSMISSION

By default, the alphabets transmission is case-sensitive, which means 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
Normal	Normal type
Capital Lock	When enabled, the keys of alphabetic characters will be interpreted as capital letters. However, this does not affect the number or punctuation keys.
Shift Lock	When enabled, the keys of alphabetic characters will be interpreted as capital letters. In addition, this affects the number or punctuation keys.

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.

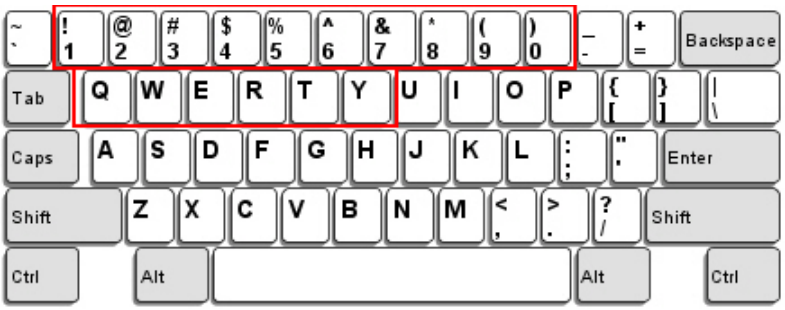
Capital Lock State	Description
Capital Lock OFF	Assuming that the status of Caps Lock on the keyboard is OFF, transmitted characters are exactly the same as in the barcode (when "case-sensitive" is selected for Alphabets Transmission).
Capital Lock ON	Assuming that the status of Caps Lock on the keyboard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

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

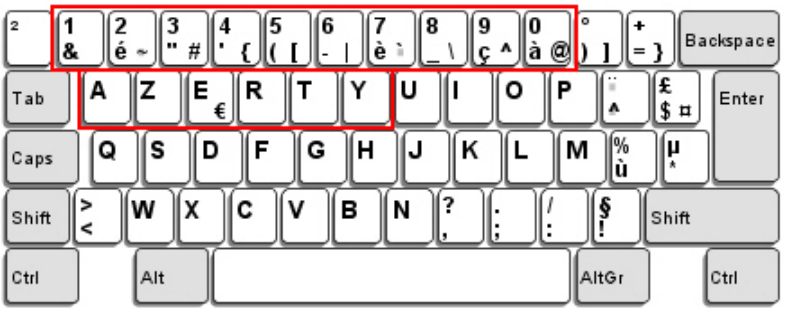
QWERTY layout, which is normally used in western countries.



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

French Keyboard Style – AZERTY

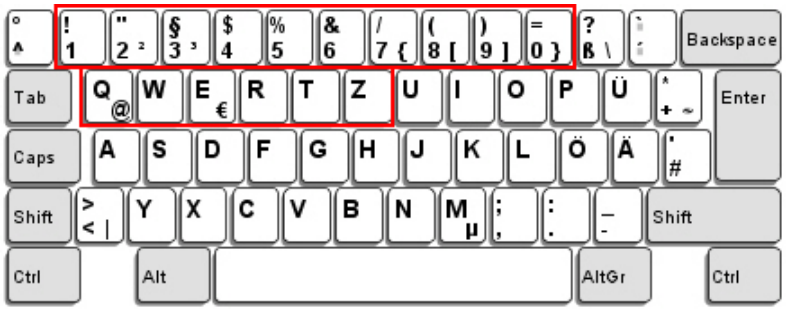
French layout; see below for French Keyboard Style.



- 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
Normal	Depends on the [Shift] key or [Shift Lock] setting
Lower Row	For QWERTY and QWERTZ keyboards
Upper Row	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 KANJI TRANSMISSION (1504/1564/1704)

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.

2.1.11 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 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.

2.1.12 SNIFF MODE (VIA 3656)

By default, this power-saving feature is enabled for 1560/1562/1564, meaning the scanner will listen to the wireless network at a reduced rate while connecting via 3656.

2.1.13 CABLE AUTO-DETEC (1504/1704)

For 1504/1704, the scanner will detect the interface automatically. Find the interface cable provided inside the package. Connect it to the scanner. Refer to Chapter 2 — Selecting Output Interface.

Cable Auto-Detect	Defaults
Keyboard Wedge	PCAT (US) for keyboard type
RS-232	115200 bps, 8 bits, No parity, 1 stop bit
USB	USB HID and PCAT (US) for keyboard type

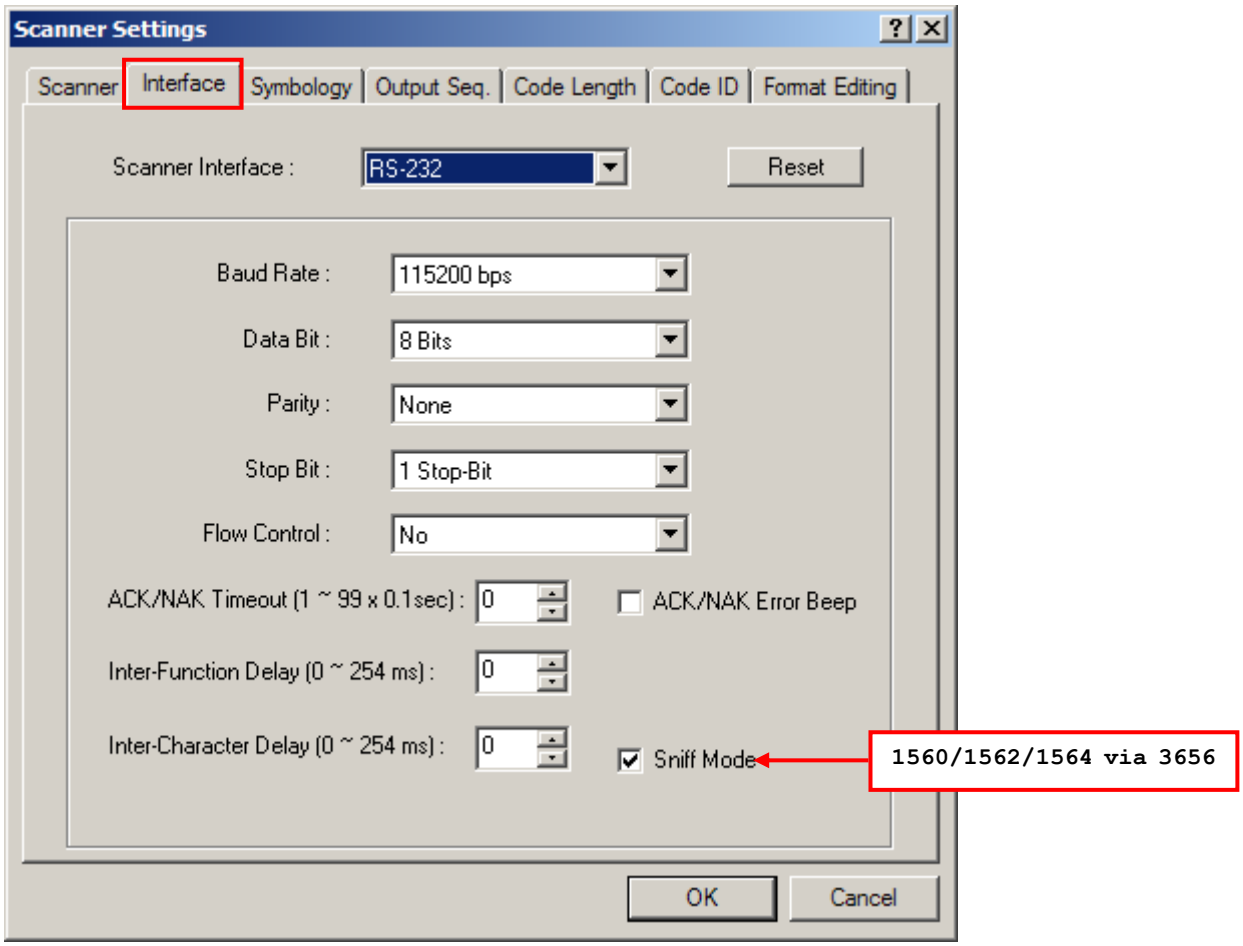
Note: If "USB Virtual COM" is desired, select it and download the setting to the scanner.

2.2 RS-232

This interface is for the following scanners:

- 1500/1502/1504/1704
- 1560/1562/1564 (via 3656)

Connect 1500/1502/1504/1704 or 3656 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 9600 bps for 1500/1502, but 115200bps for 1504/1704 and 3656. 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
No	No flow control
Scanner Ready	The scanner will activate the RTS signal upon powering on. After each good read, the scanner will then wait for the CTS signal to become active. Data will not be sent until the CTS signal becomes active.
Data Ready	The RTS signal will be activated after each good read. The scanner will then wait for the CTS signal to become active. Data will not be sent until the CTS signal becomes active.
Inverted Data Ready	It works the same as the Data Ready flow control, except that the RTS signal level is inverted.

2.2.6 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.

2.2.7 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.

2.2.8 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.

2.2.9 SNIFF MODE (VIA 3656)

By default, this power-saving feature is enabled for 1560/1562/1564, meaning the scanner will listen to the wireless network at a reduced rate while connecting via 3656.

2.2.10 CABLE AUTO-DETEC (1504/1704)

For 1504/1704, the scanner will detect the interface automatically. Find the interface cable provided inside the package. Connect it to the scanner. Refer to Chapter 2 — Selecting Output Interface.

Cable Auto-Detect	Defaults
Keyboard Wedge	PCAT (US) for keyboard type
RS-232	115200 bps, 8 bits, No parity, 1 stop bit
USB	USB HID and PCAT (US) for keyboard type

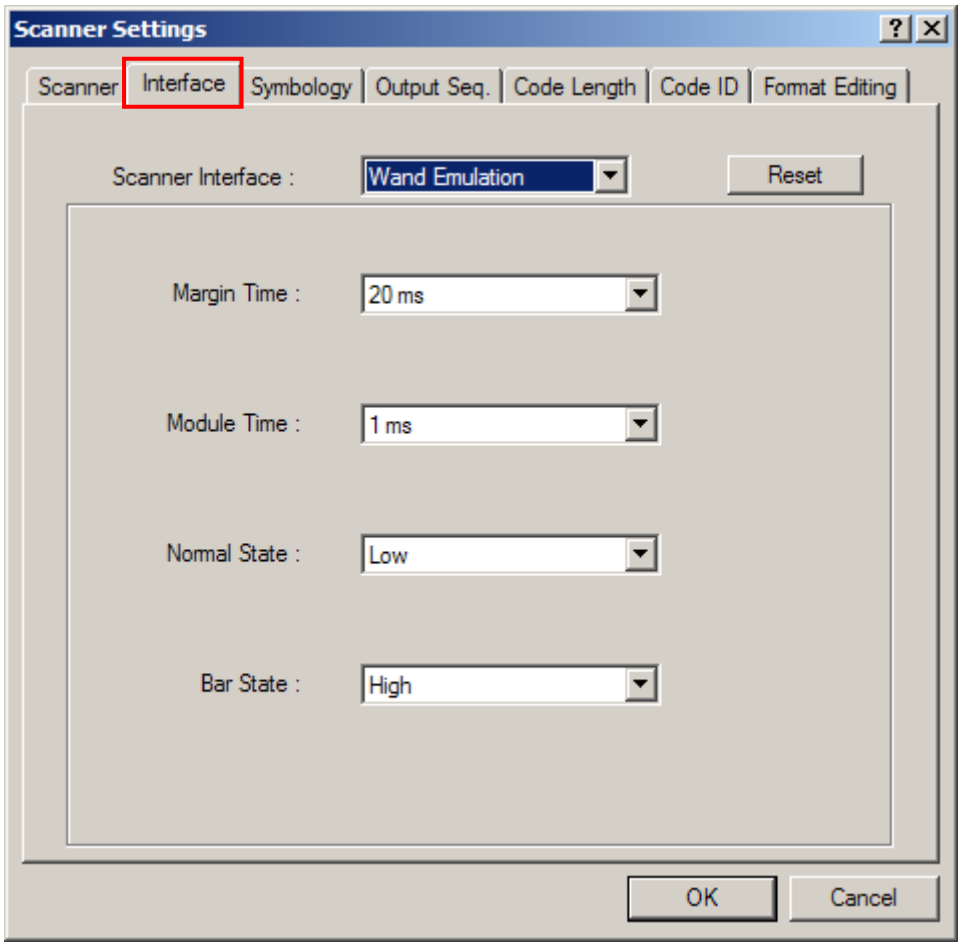
Note: If "USB Virtual COM" is desired, select it and download the setting to the scanner.

2.3 WAND EMULATION

This interface is for the following scanners:

- 1500/1502

Connect the scanner to a portable data terminal or decoder that is expecting input from a wand scanner.



Note: Wands are handheld optical character readers used to read typewritten fonts, printed fonts, OCR fonts, and barcodes.

2.3.1 MARGIN TIME

By default, it is set 20 milliseconds as the time span for the change in state for bar and space modules. Select other value for the margin time.

2.3.2 MODULE TIME

By default, it is set 1 millisecond as the time span for bar and space modules. Select other value for the module time, in units of micro-second or millisecond.

2.3.3 NORMAL STATE

By default, the signal level is set "Low" for the normal state when not transmitting any barcode.

2.3.4 BAR STATE

By default, the signal level is set "High" for a bar when transmitting a barcode. Select "Low" for a bar if "High" for a space is desired.

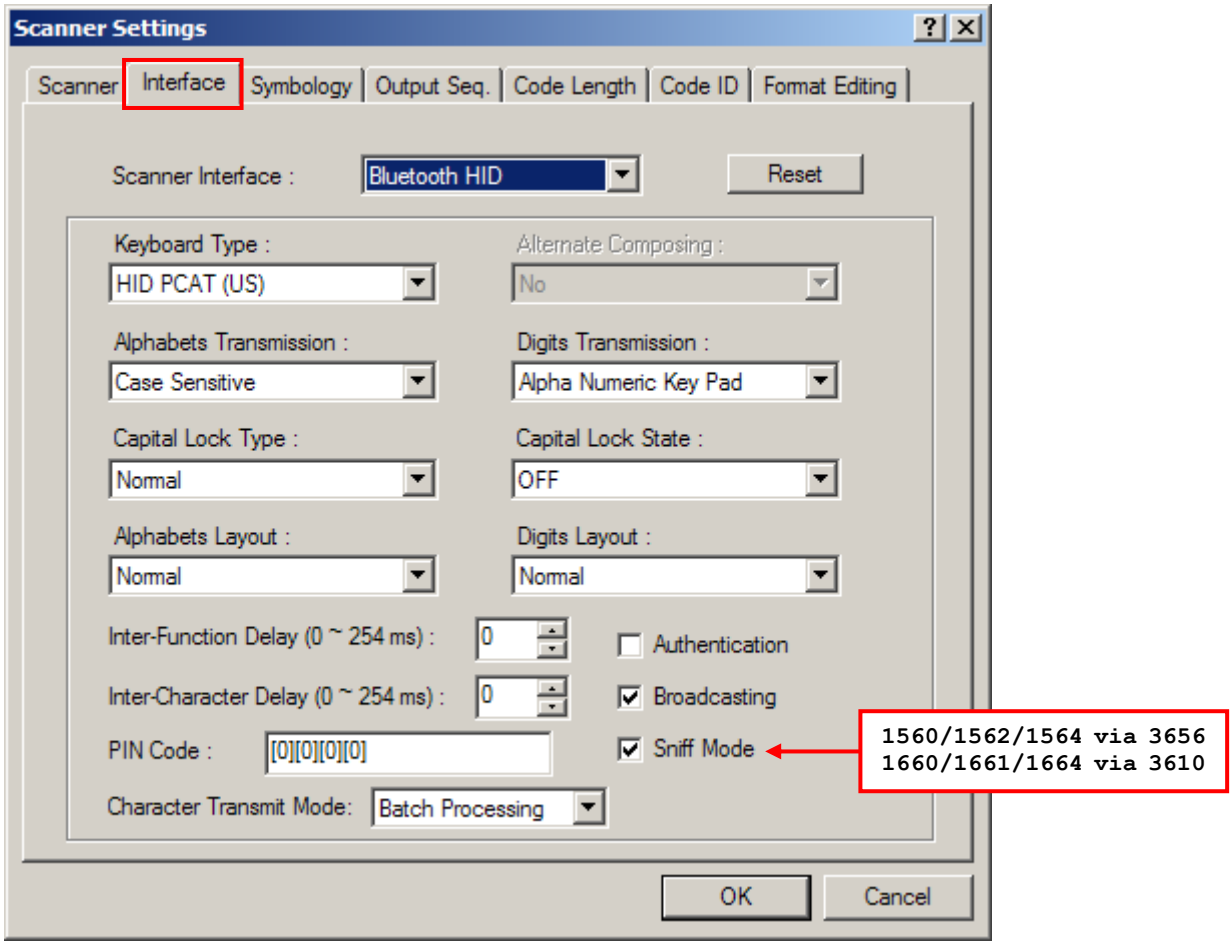
2.4 BLUETOOTH HID

This interface is provided for the following scanners:

- 1560/1562/1564 (connecting to dongle or via 3656)
- 1660/1661/1664 (connecting to dongle or via 3610)

In this mode, re-connection is made easy and reliable, just like connecting with 3610 (for 1660/1661/1664) or 3656 (for 1560/1562/1564). As a HID 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" barcode. Refer to a separate manual for instructions.



2.4.1 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)
		77	PCAT (Hungarian)

2.4.2 KEYBOARD SETTINGS

Refer to 2.1 Keyboard Wedge.

- 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

2.4.3 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.

2.4.4 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.

2.4.5 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.

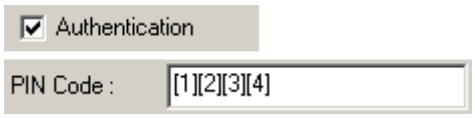
2.4.6 AUTHENTICATION

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:

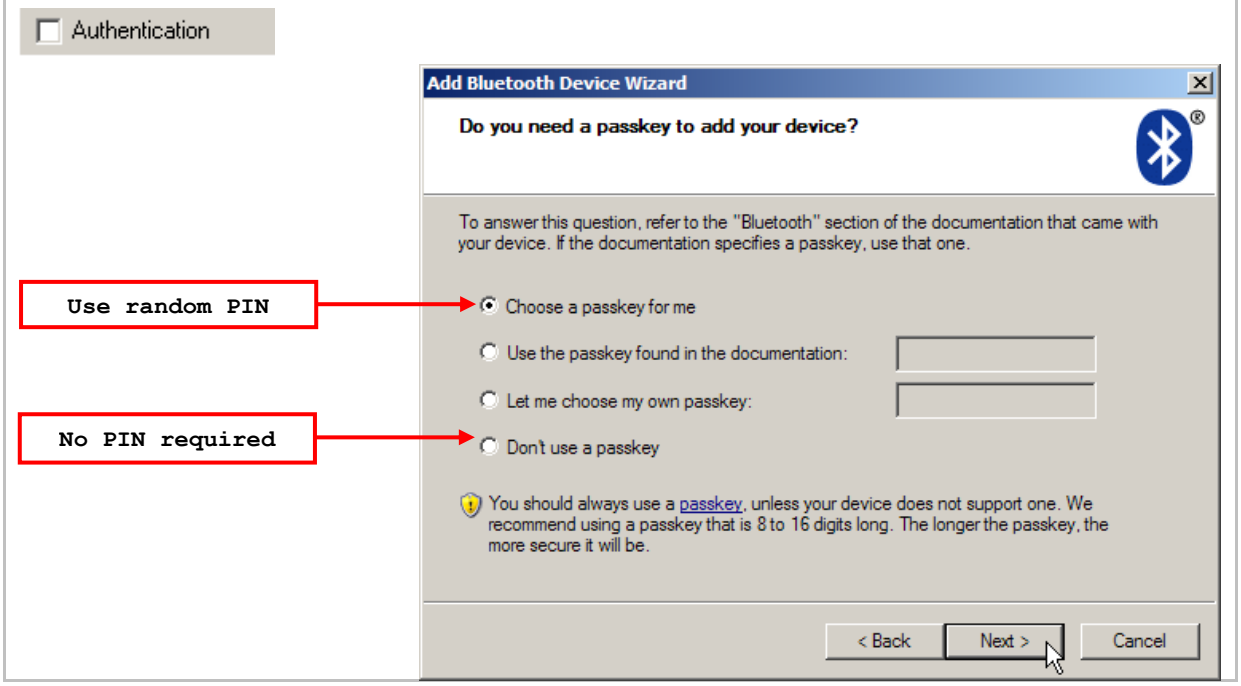
Enable Authentication with Preset PIN

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.

2.4.7 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).

2.4.8 SNIFF MODE

By default, this power-saving feature is enabled for 1560/1562/1564/1660/1661/1664, 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.

2.4.9 KANJI TRANSMISSION (1564)

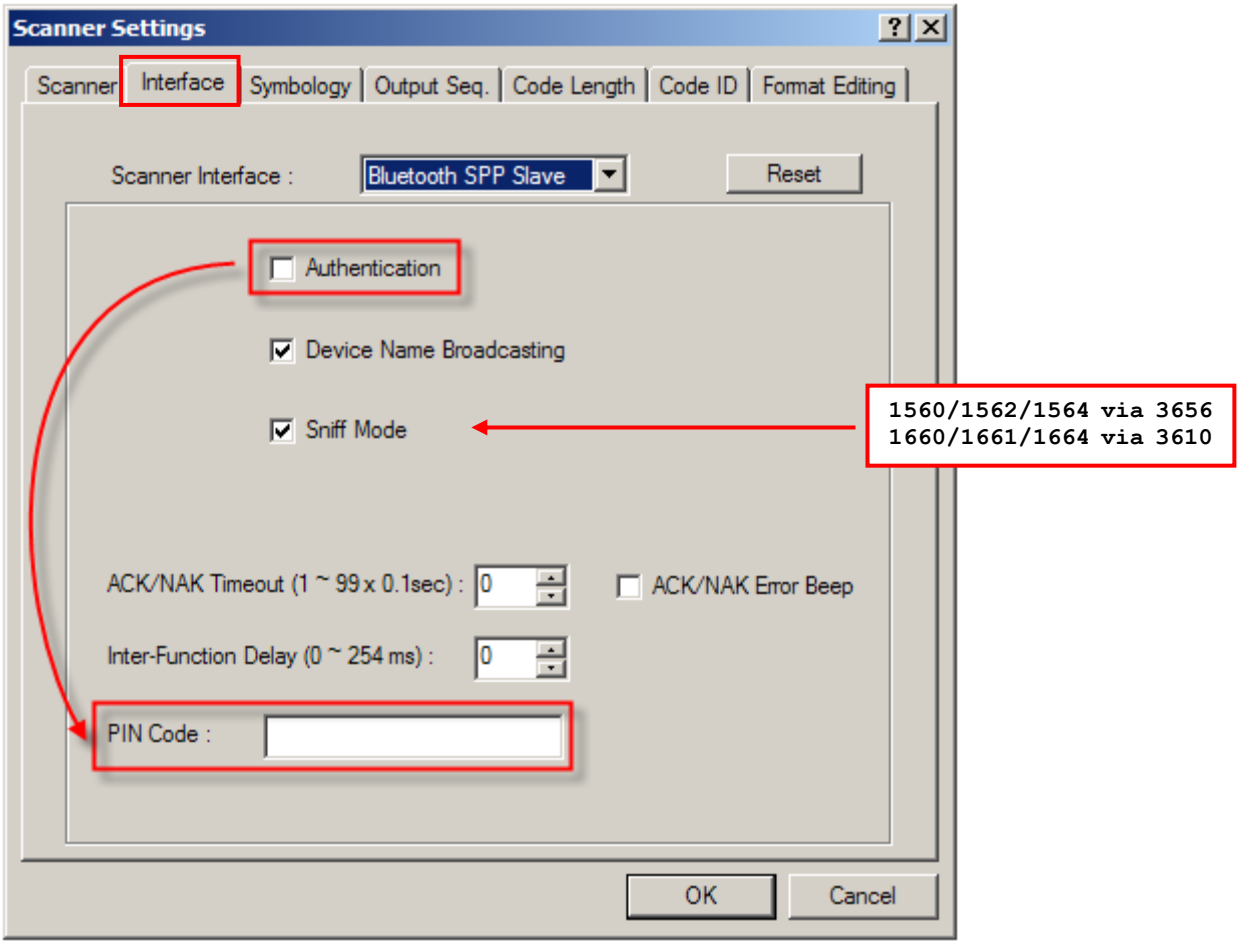
Kanji Transmission is deselected by default. Select it to enable the scanner to transmit the Japanese characters collected from 2D barcodes to a host computer that runs on Japanese Windows O.S.

2.5 BLUETOOTH SPP SLAVE MODE

This interface is provided for the following scanners:

- 1560/1562/1564 (connecting to dongle or via 3656)
- 1660/1661/1664 (connecting to dongle or via 3610)

Both Bluetooth SPP Master and Slave Mode are supported.

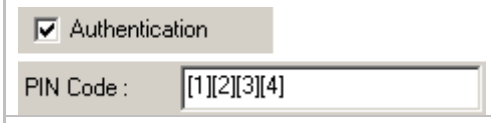


2.5.1 AUTHENTICATION

When any changes are made to the authentication and PIN code on the scanner side, you 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:

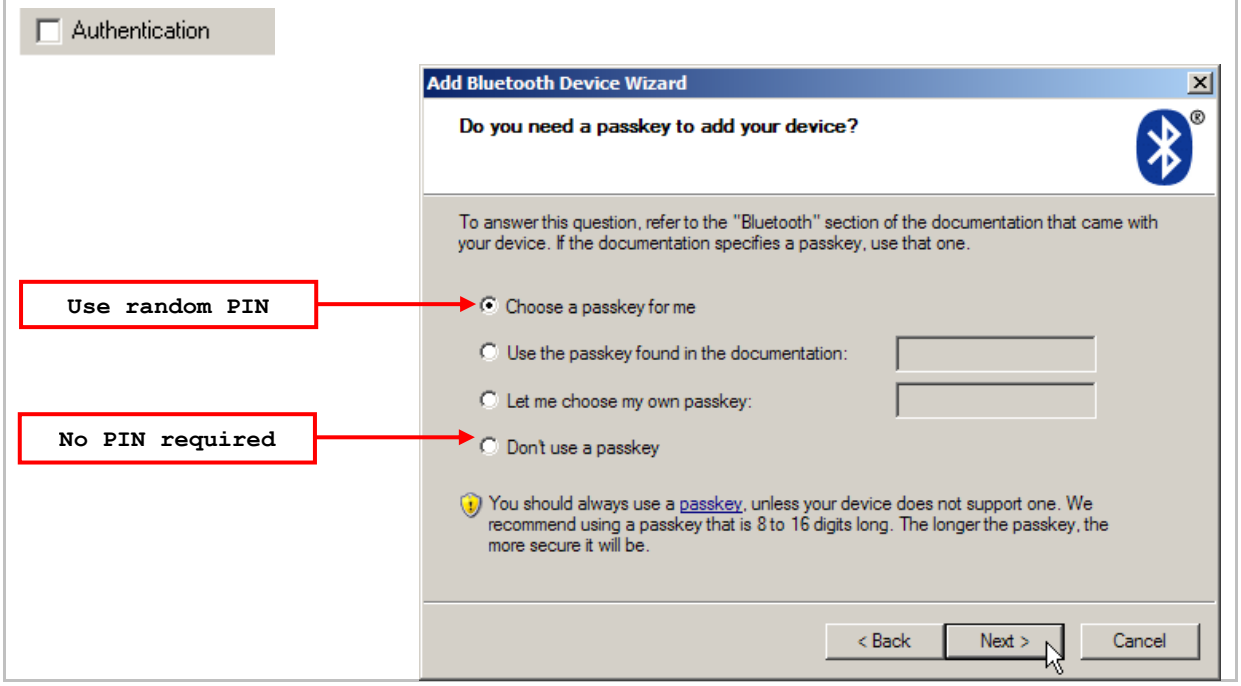
Enable Authentication with Preset PIN

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: For 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 display 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.

2.5.2 DEVICE NAME BROADCASTING

Device Name Broadcasting is selected by default. Deselect it to hide the scanner from other *Bluetooth*®-enabled devices such as PC or PDA. However, broadcasting must be enabled for establishing an initial connection with other *Bluetooth*®-enabled devices.

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 have to enable device name broadcasting first.

Note: Device Name Broadcasting is selected by default (as it is required for initial connection).

2.5.3 SNIFF MODE

This power-saving feature is selected by default for 1560/1562/1564/1660/1661/1664, 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.

2.5.4 INTER-FUNCTION DELAY

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

2.5.5 ACK/NAK TIMEOUT

By default, the scanner sends data to the host without waiting for an ACK/NAK response before sending more data. Set a value ranging from 1 to 99 by the unit of 0.1 second for the time that the scanner waits for the host computer's ACK/NAK response. If no response is received before the specified timeout, the scanner will attempt to send the same data three more times. If all 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 the data.

2.6 BLUETOOTH SPP MASTER MODE

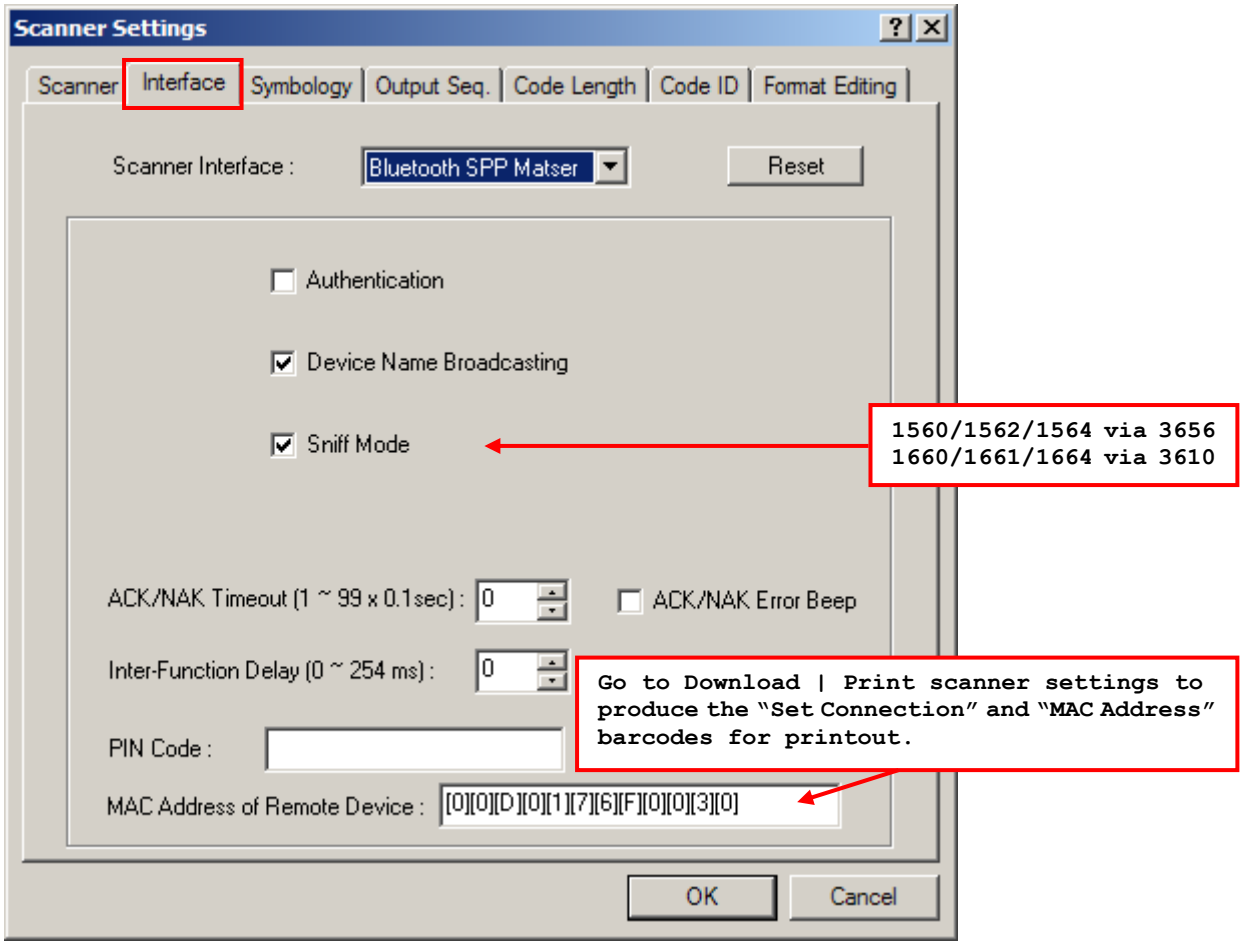
This interface is provided for the following scanners:

- 1560/1562/1564 (connecting to dongle or via 3656)
- 1660/1661/1664 (connecting to dongle or via 3610)

In this mode, re-connection is made easy and reliable, just like connecting with 3610 (for 1660/1661) or 3656 (for 1560/1562/1564). Being SPP master, 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 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" barcode. Refer to a separate manual for instructions.

For the connection settings, refer to 2.5 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 (1560/1562/1564/1660/1661/1664).

How to connect with the target device?

Produce two setup barcodes for the target SPP slave device, just like what we do for 3610 or 3656.

- "Set Connection" barcode
- "MAC Address" barcode

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" barcodes for printout.
5. Have the scanner read the "Set Connection" and "MAC Address" barcodes. It will respond with one beep upon reading each of the barcodes.

Note: (1) It will automatically add a prefix of "0x" to the real MAC address of the target device.
(2) Read the "Set Connection" barcode first, and then the "MAC Address" barcode 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.

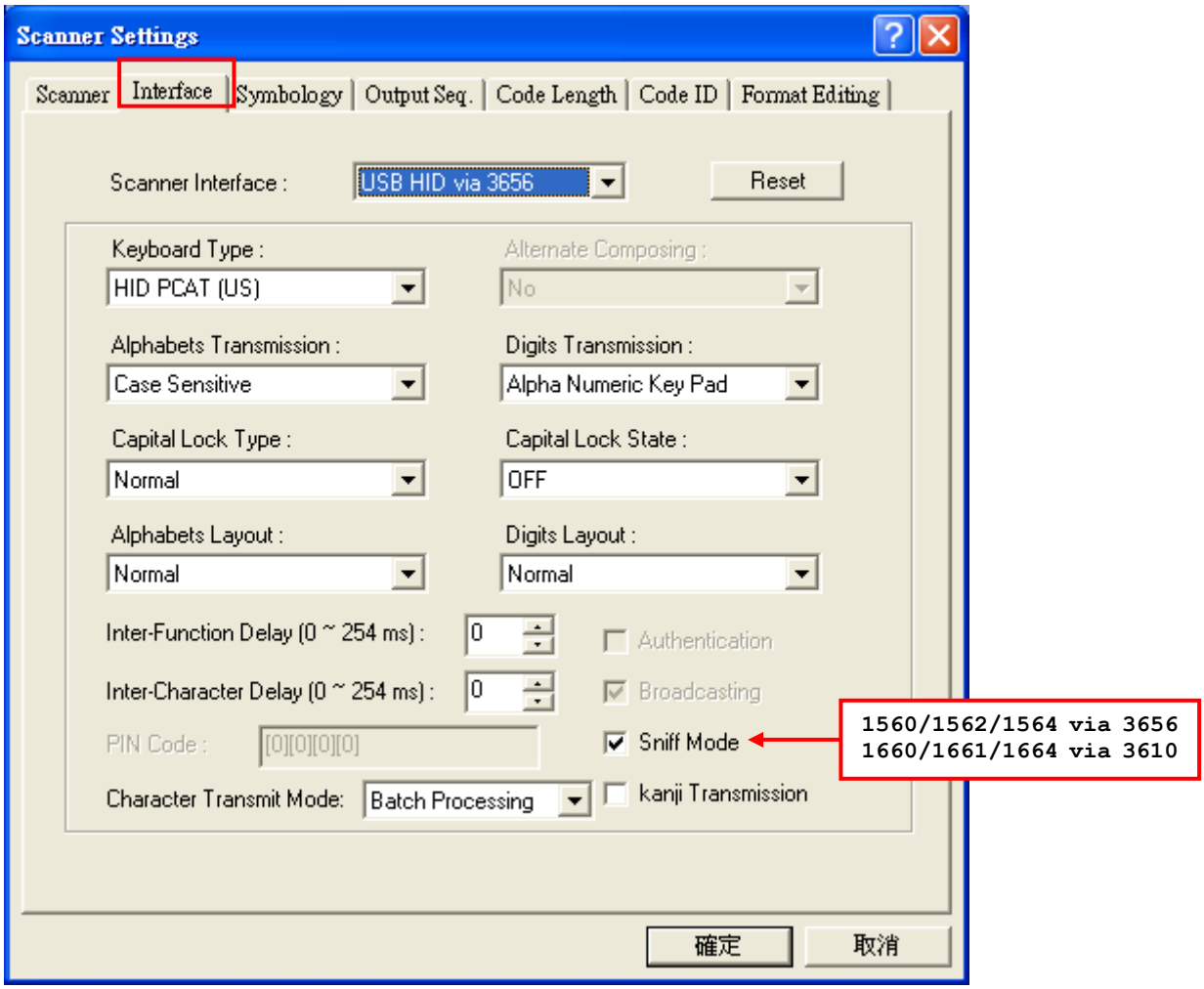
Exit SPP Master Mode

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" barcode 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.

2.7 USB HID VIA 3656/3610

This interface is provided for the following scanners:

- 1560/1562/1564 (via 3656)
- 1660/1661/1664 (via 3610)



Kanji Transmission is made available for 1564 when the output interface is set to USB HID via 3656. Select Kanji Transmission to enable the scanner to transmit the Japanese characters collected from 2D barcodes to a host computer that runs on Japanese Windows O.S.

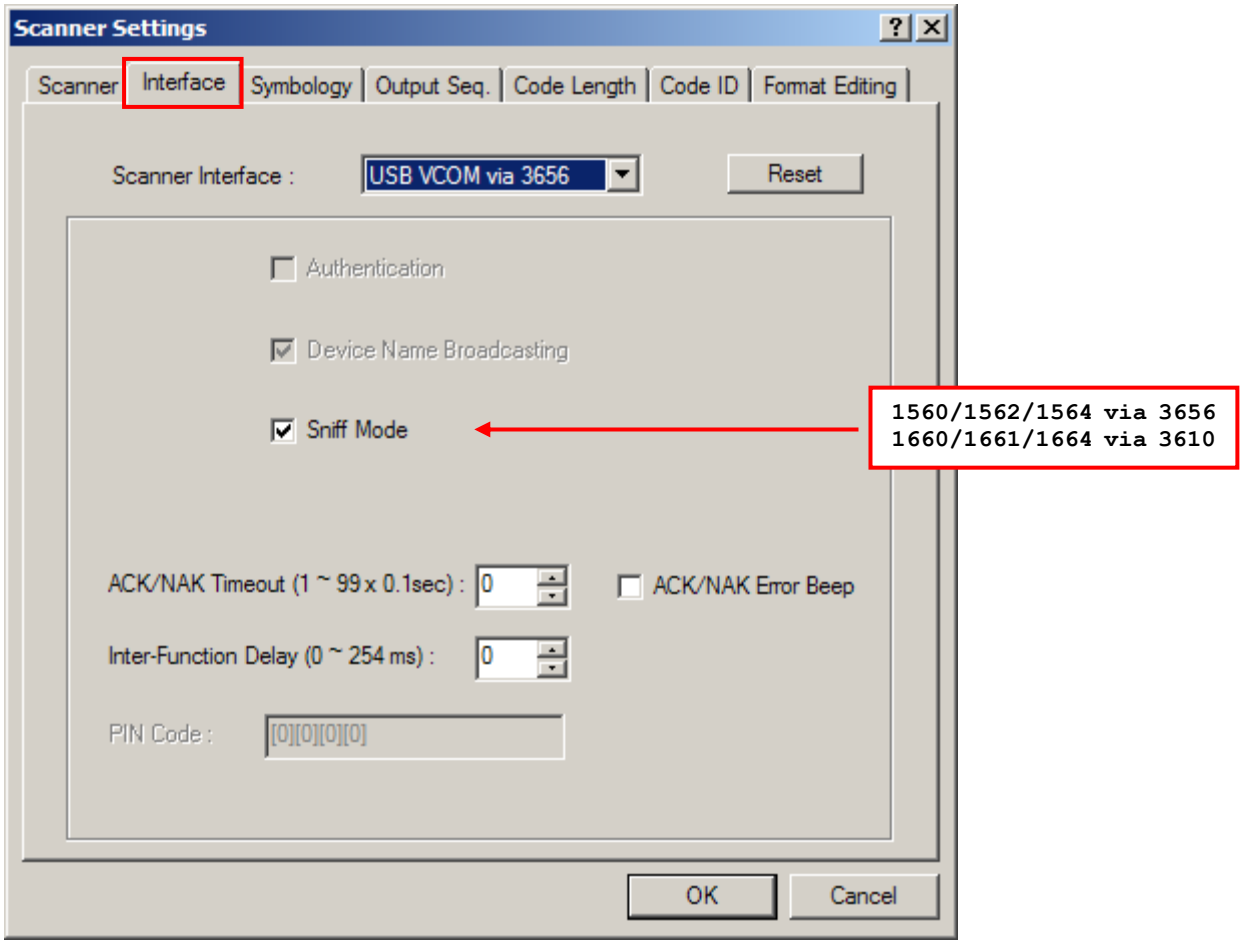
For the complete interface settings for USB HID via 3656/3610, refer to 2.4 Bluetooth HID.

2.8 USB VIRTUAL COM VIA 3656/3610

This interface is provided for the following scanners:

- 1560/1562/1564 (via 3656)
- 1660/1661/1664 (via 3610)

For the connection settings, refer to 2.5 Bluetooth SPP Slave Mode.



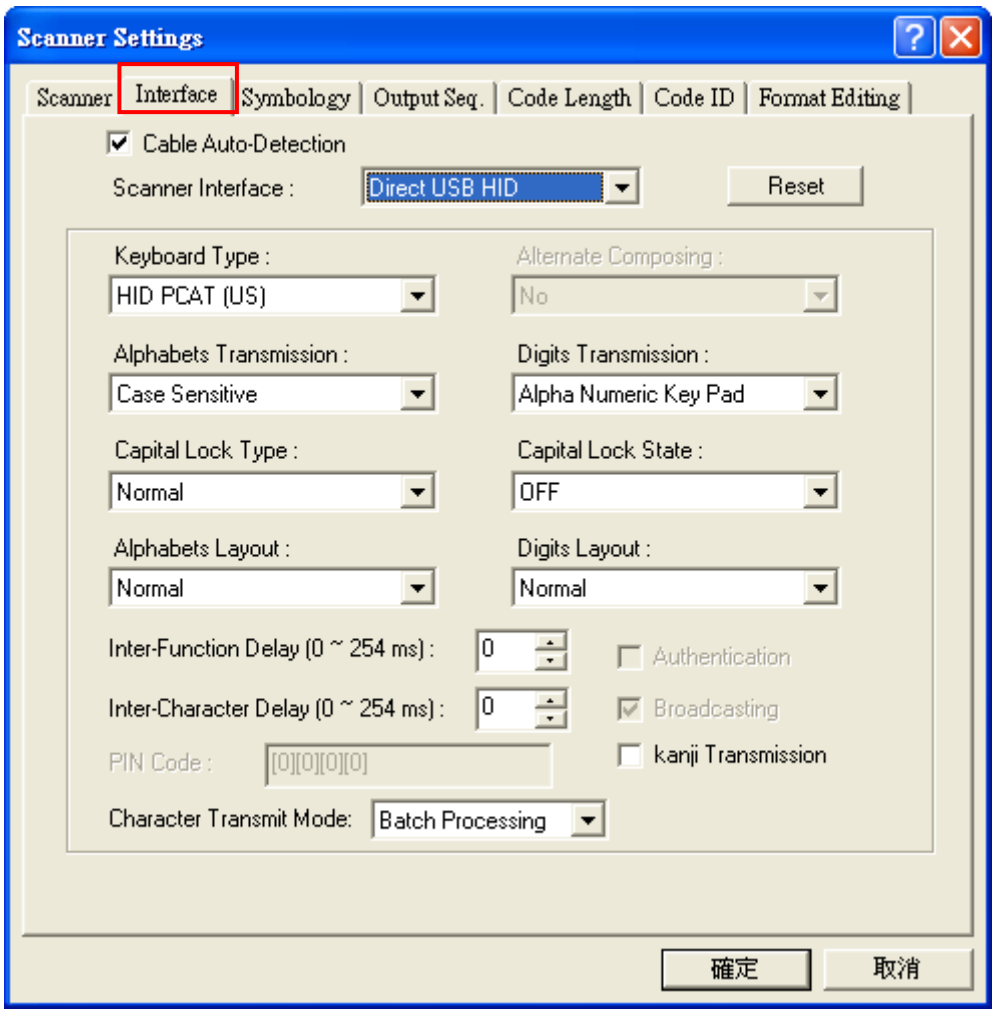
Note: If you are using USB Virtual COM for the first time, you must install its driver from the CD-ROM. Driver version 5.3 or later is required. Please remove older versions!

2.9 DIRECT USB HID

This interface is provided for the following scanners:

- 1070
- 1504
- 1661
- 1664
- 1704

For the connection settings, refer to 2.4 Bluetooth HID.



2.9.1 CABLE AUTO-DETEC FOR 1504/1704

For 1504/1704, the scanner will detect the interface automatically. Find the interface cable provided inside the package. Connect it to the scanner. Refer to Chapter 2 — Selecting Output Interface.

Cable Auto-Detect	Defaults
Keyboard Wedge	PCAT (US) for keyboard type
RS-232	115200 bps, 8 bits, No parity, 1 stop bit
USB	USB HID and PCAT (US) for keyboard type

Note: If "USB Virtual COM" is desired, select it and download the setting to the scanner.

2.9.2 MANUAL SWITCH OF INTERFACE FOR 1070

Use the provided USB cable to connect 1070 to the USB port of PC. You have to select the correct interface for use.

2.9.3 SECONDARY INTERFACE FOR 1661/1664

Only 1661 and 1664 supports "Direct" USB interface, referred to as "the Secondary Interface", for Memory Mode use.

Enable Secondary Interface

Use the provided USB cable to connect the scanner to the USB port of your PC. By default, it is set to use "Direct USB Virtual COM" when you connect the cable in Memory Mode. You may change it to "Direct USB HID" if necessary.

For Send Data Time-out setting, if a value other than zero is given, it will first try to send data via the "Direct" USB interface within the specified period of time. You must connect the cable before it times out. When the attempt fails, it will try to temporarily resume the previous WPAN connection with the host, if there is any. If the scanner has never been connected to the host wirelessly, it will not be able to send data until you connect the Direct USB cable!

Disable Secondary Interface

You may disable "the Secondary Interface" in advance to avoid sending data to host in memory mode via the cable. It will then allow charging the battery only.

2.9.4 KANJI TRANSMISSION FOR 1504/1704

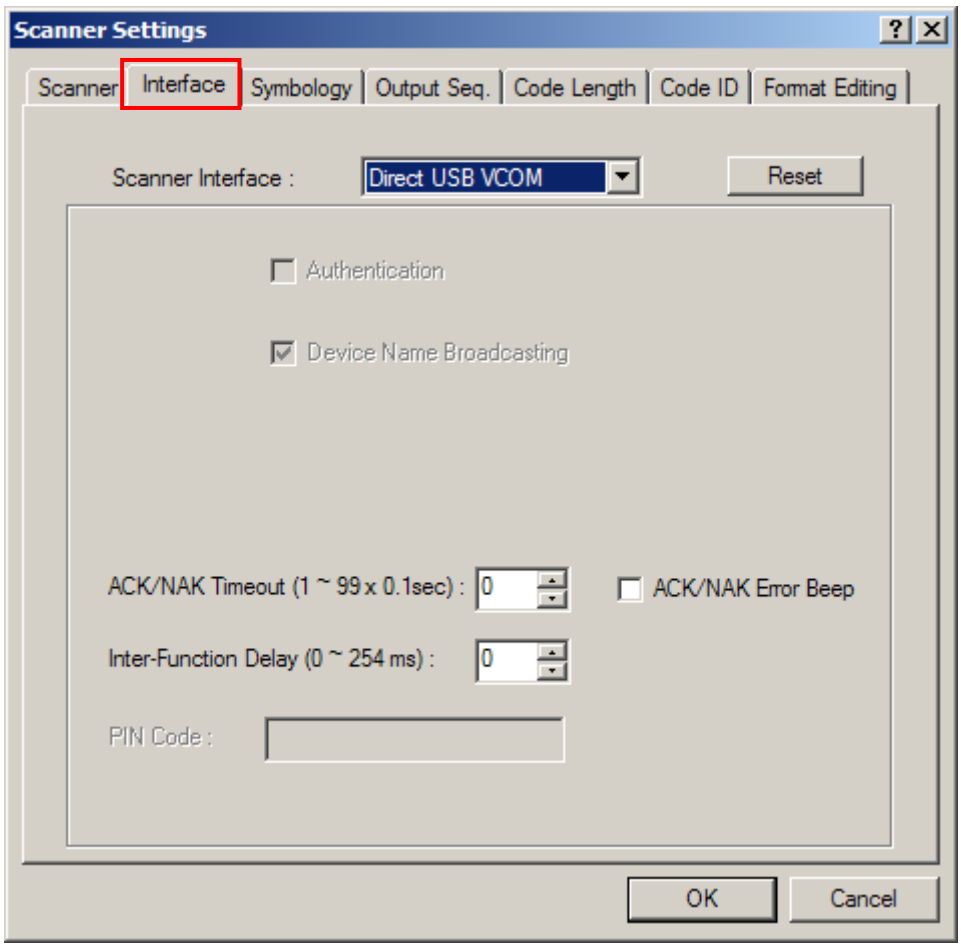
Kanji Transmission is deselected by default. Select it to enable the scanner to transmit the Japanese characters collected from 2D barcodes to a host computer that runs on Japanese Windows O.S.

2.10 DIRECT USB VCOM

This interface is for the following scanners:

- 1070
- 1504
- 1661
- 1664
- 1704

For the connection settings, refer to 2.5 Bluetooth SPP Slave Mode.



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! For 1070 to connect to Windows PC, you must select Direct USB VCOM_CDC. Refer to 2.11 Direct USB VCOM_CDC.

2.10.1 CABLE AUTO-DETEC FOR 1504/1704

For 1504/1704, the scanner will detect the interface automatically. Find the interface cable provided inside the package. Connect it to the scanner. Refer to Chapter 2 — Selecting Output Interface.

Cable Auto-Detect	Defaults
Keyboard Wedge	PCAT (US) for keyboard type
RS-232	115200 bps, 8 bits, No parity, 1 stop bit
USB	USB HID and PCAT (US) for keyboard type

Note: If "USB Virtual COM" is desired, select it and download the setting to the scanner.

2.10.2 MANUAL SWITCH OF INTERFACE FOR 1070

Use the provided USB cable to connect 1070 to the USB port of PC. You have to select the correct interface for use.

Note: For 1070 to connect to Windows PC, you must select Direct USB VCOM_CDC. Refer to 2.11 Direct USB VCOM_CDC.

2.10.3 SECONDARY INTERFACE FOR 1661/1664

Only 1661 and 1664 supports "Direct" USB interface, referred to as "the Secondary Interface", for Memory Mode use.

Enable Secondary Interface

Use the provided USB cable to connect the scanner to the USB port of your PC. By default, it is set to use "Direct USB Virtual COM" when you connect the cable in Memory Mode. You may change it to "Direct USB HID" if necessary.

For Send Data Time-out setting, if a value other than zero is given, it will first try to send data via the "Direct" USB interface within the specified period of time. You must connect the cable before it times out. When the attempt fails, it will try to temporarily resume the previous WPAN connection with the host, if there is any. If the scanner has never been connected to the host wirelessly, it will not be able to send data until you connect the Direct USB cable!

Disable Secondary Interface

You may disable "the Secondary Interface" in advance to avoid sending data to host in memory mode via the cable. It will then allow charging the battery only.

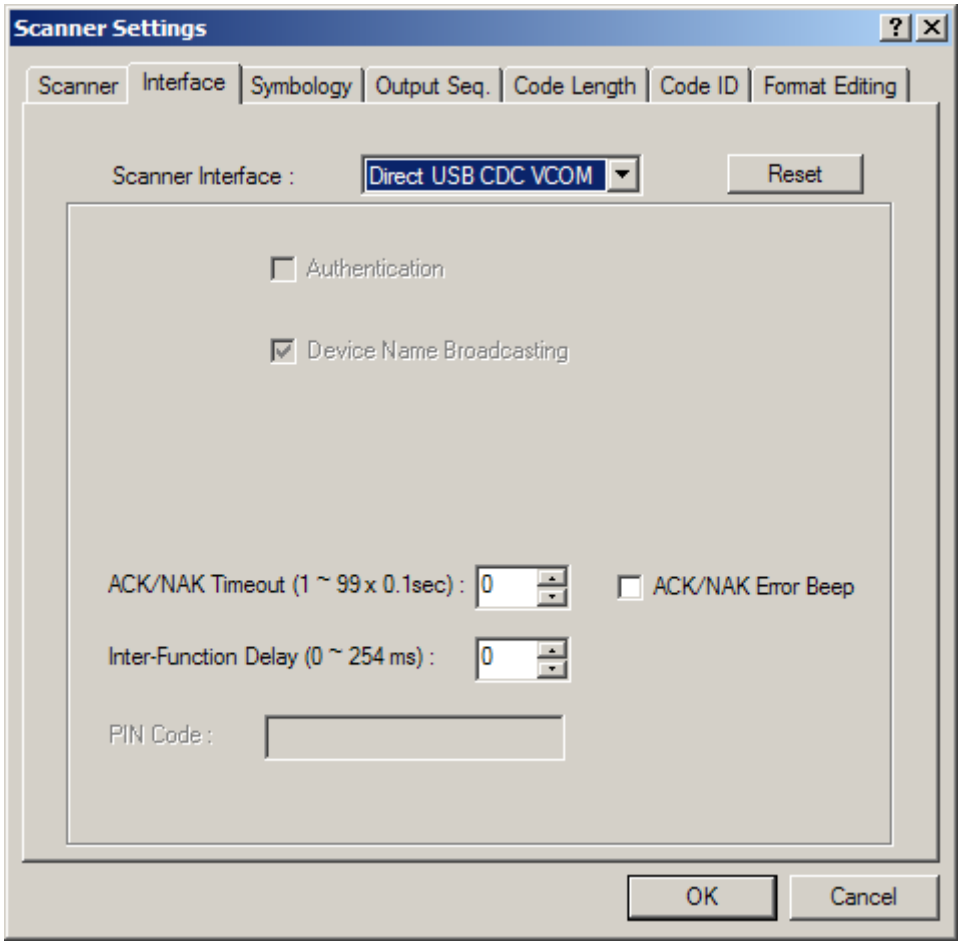
2.11 DIRECT USB VCOM_CDC

This interface is for the following scanners:

- 1070
- 1504

Use the provided USB cable to connect 1070/1504 to the USB port of PC.

For the connection settings, refer to 2.5 Bluetooth SPP Slave Mode.

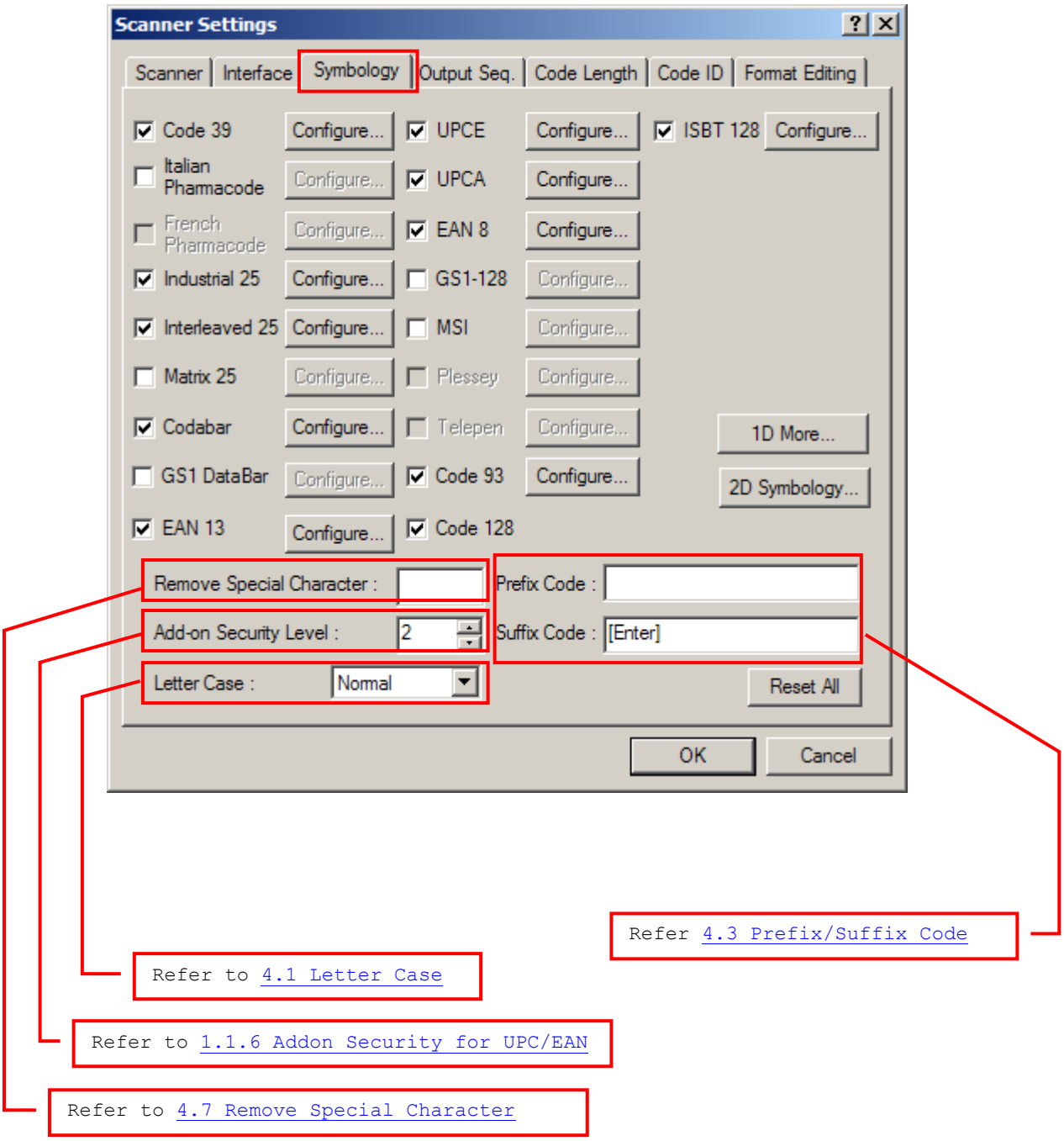


Note: If you are using USB Virtual COM for the first time, you must install its driver from the CD-ROM. USB CDC driver installer is available in the "Windows" folder for 1070/1504, which will copy a vendor-supplied INF file to Windows.

Chapter 3

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.



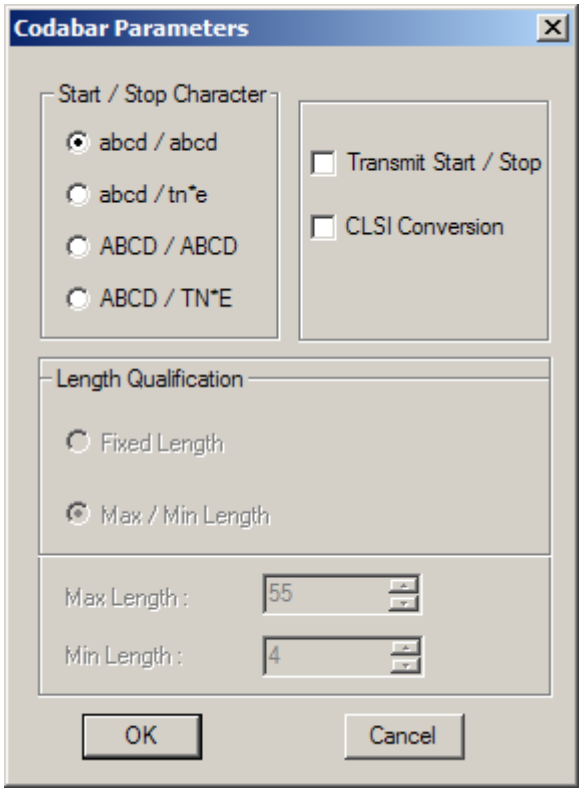
IN THIS CHAPTER

3.1 CODABAR

3.1.1 FOR 1D SCANNERS

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

- Advanced settings are provided as shown below.

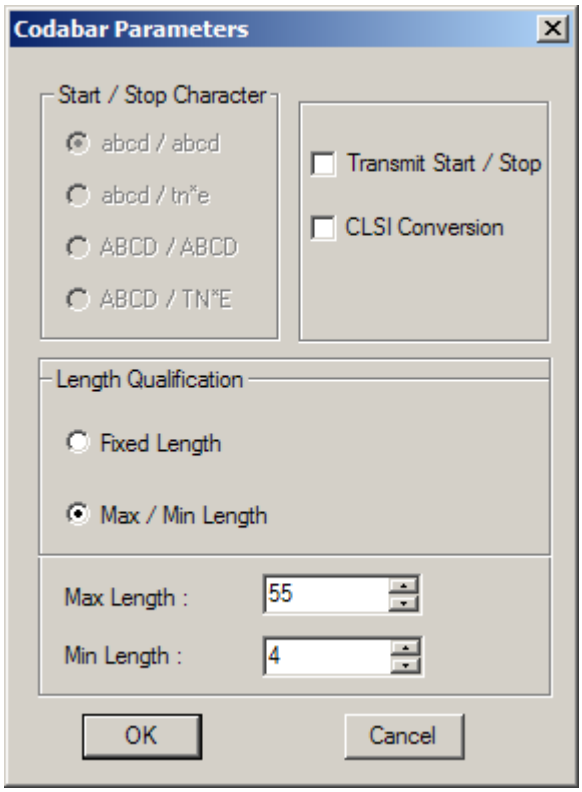


Start/Stop Character
Select one of the four different start/stop character pairs.
Transmit Start/Stop Character
Decide whether to include the selected start/stop characters in the data being transmitted.
CLSI Conversion
Decide whether to strip the start/stop characters and insert a space after the first, 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.

3.1.2 FOR 2D SCANNERS

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

- Advanced settings are provided as shown below.



Transmit Start/Stop Character

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

CLSI Conversion

Decide whether to strip the start/stop characters and insert a space 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".

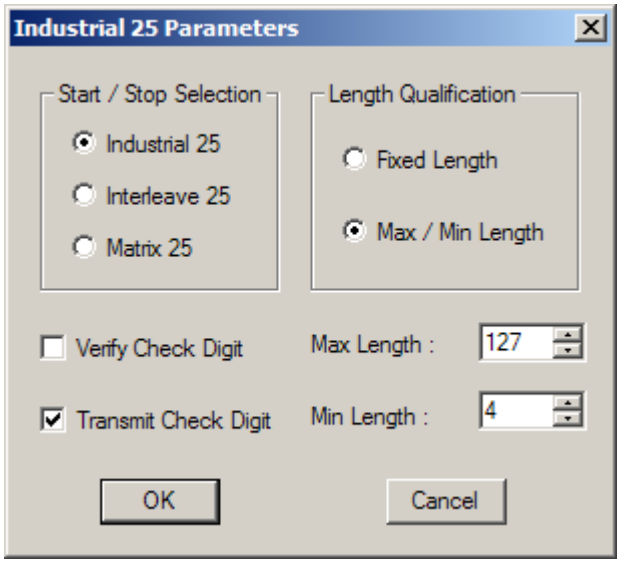
- For "Fixed Length", up to 2 fixed lengths can be specified.
- For "Max/Min Length", the maximum length and the minimum length must be specified. The scanner will only accept those barcodes with lengths that fall between max/min lengths specified.

3.2 CODE 25 – INDUSTRIAL 25

3.2.1 FOR 1D SCANNERS

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

- Advanced settings are provided as shown below.



Start/Stop Selection

Select a desired start/stop pattern. For example, flight tickets actually use an Industrial 25 barcode but with Interleaved 25 start/stop pattern. In order to read this barcode, the start/stop pattern selection of Industrial 25 should set to Interleaved 25.

Verify Check Digit

Decide whether to verify check digit when decoding Industrial 25 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

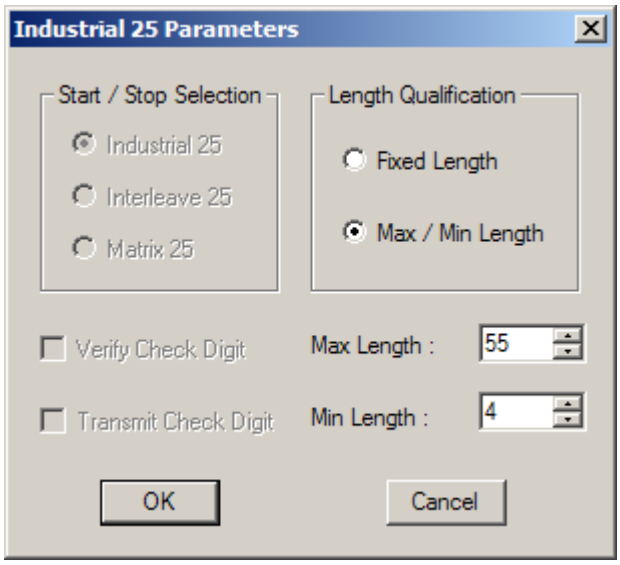
Because of the weak structure of the 2 of 5 barcodes, it is possible to make a "short scan" error. To prevent the "short scan" error, configure the "Length Qualification" settings to ensure that the correct barcode is read by qualifying the allowable code length. The barcode can be qualified by "Fixed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

3.2.2 FOR 2D SCANNERS

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".

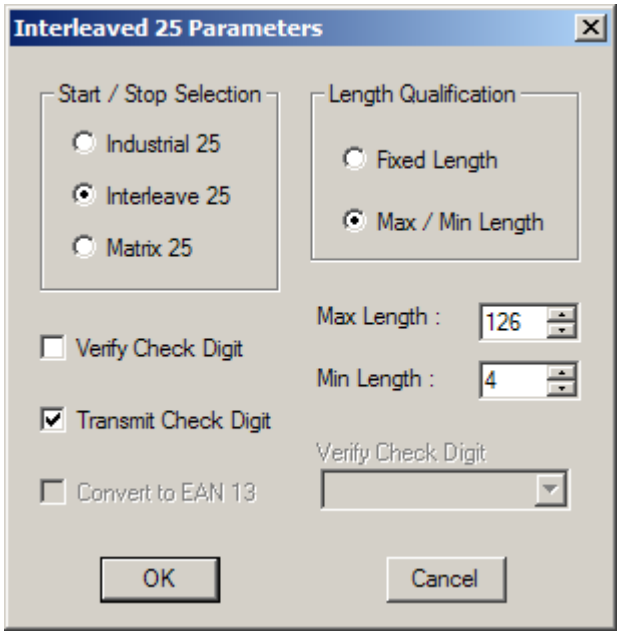
- For "Fixed Length", up to 2 fixed lengths can be specified.
- For "Max/Min Length", the maximum length and the minimum length must be specified. The scanner will only accept those barcodes with lengths that fall between max/min lengths specified.

3.3 CODE 25 – INTERLEAVED 25

3.3.1 FOR 1D SCANNERS

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

- Advanced settings are provided as shown below.

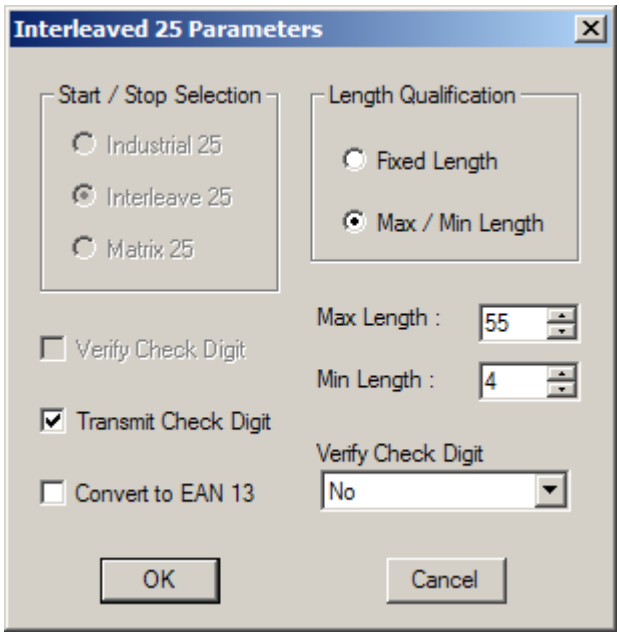


Start/Stop Selection
Select a desired start/stop pattern.
Verify Check Digit
Decide whether to verify check digit when decoding Industrial 25 barcodes. If the check digit is incorrect, the barcode will not be accepted.
Transmit Check Digit
The check digit will be included in the data being transmitted. Cancel the check box if the check digit is not desired.
Length Qualification
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.

3.3.2 FOR 2D SCANNERS

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

- Advanced settings are provided as shown below.



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.

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".

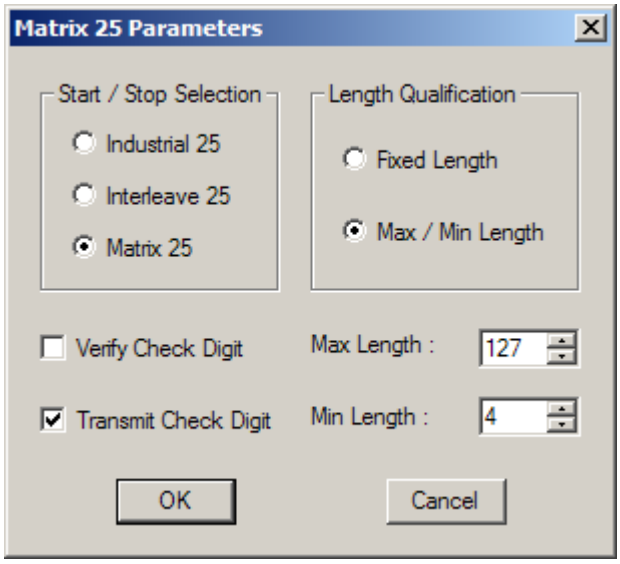
- For "Fixed Length", up to 2 fixed lengths can be specified.
- For "Max/Min Length", the maximum length and the minimum length must be specified. The scanner will only accept those barcodes with lengths that fall between max/min lengths specified.

3.4 CODE 25 – MATRIX 25

3.4.1 FOR 1D SCANNERS

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

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

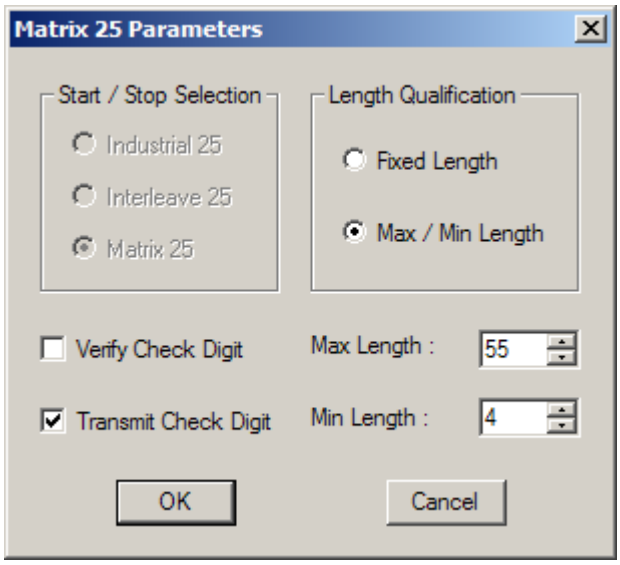


Start/Stop Selection
Select a desired start/stop pattern.
Verify Check Digit
Decide whether to verify check digit when decoding Matrix 25 barcodes. If the check digit is incorrect, the barcode will not be accepted.
Transmit Check Digit
The check digit will be included in the data being transmitted. Cancel the check box if the check digit is not desired.
Length Qualification
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.

3.4.2 FOR 2D SCANNERS

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

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



Verify Check Digit

Decide whether to verify check digit when decoding Matrix 25 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

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".

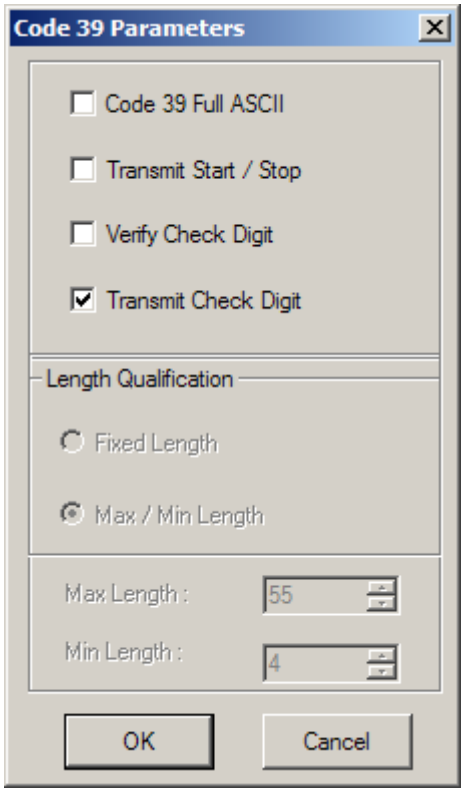
- For "Fixed Length", up to 2 fixed lengths can be specified.
- For "Max/Min Length", the maximum length and the minimum length must be specified. The scanner will only accept those barcodes with lengths that fall between max/min lengths specified.

3.5 CODE 39

3.5.1 FOR 1D SCANNERS

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

- Advanced settings are provided as shown below.

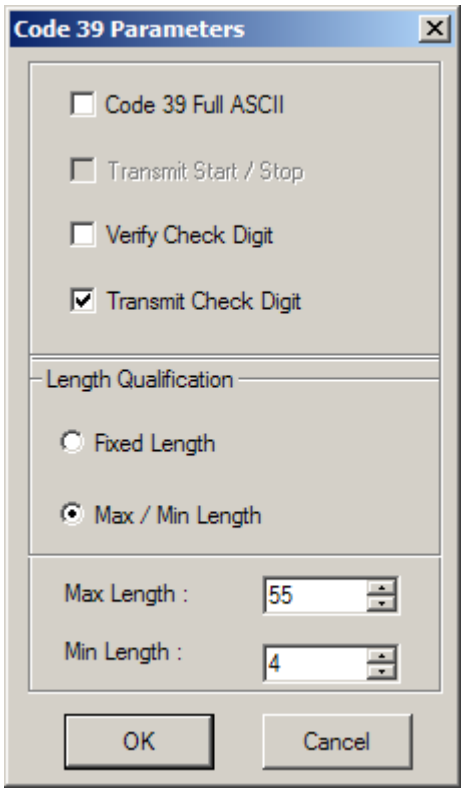


Code 39 Full ASCII
Decide whether to support Code 39 Full ASCII that includes all the alphanumeric and special characters.
Transmit Start/Stop
Decide whether to include the start/stop characters in the data being transmitted.
Verify Check Digit
Decide whether to verify check digit when decoding Code 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.

3.5.2 FOR 2D SCANNERS

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

- Advanced settings are provided as shown below.



Code 39 Full ASCII
Decide whether to support Code 39 Full ASCII that includes all the alphanumeric and special characters.
Verify Check Digit
Decide whether to 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 length and the minimum length must be specified. The scanner will only accept those barcodes with lengths that fall between max/min lengths specified.

3.6 CODE 93

3.6.1 FOR 1D SCANNERS

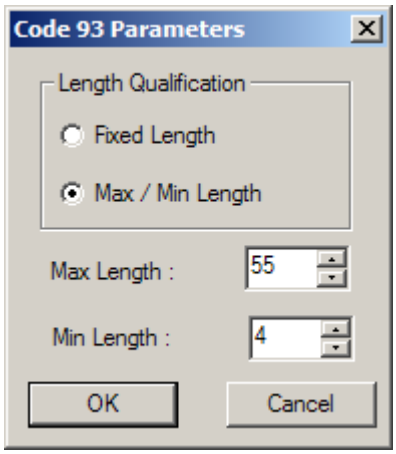
By default, the scanner is set to read Code 93 barcodes.

- No advanced settings are available.

3.6.2 FOR 2D SCANNERS

By default, the scanner is set to read Code 93 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 length and the minimum length must be specified. The scanner will only accept those barcodes with lengths that fall between max/min lengths specified.

3.7 CODE 128

3.7.1 FOR 1D SCANNERS

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

- No advanced settings are available.

3.7.2 FOR 2D SCANNERS

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

- No advanced settings are available.

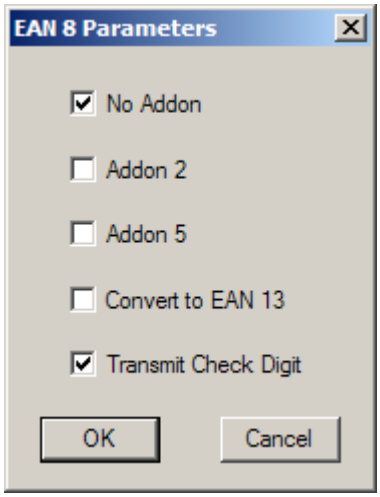
3.8 EAN-8

3.8.1 FOR 1D SCANNERS

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

Convert to EAN-13

Decide whether to expand the read EAN-8 barcode, as well as its addons, into EAN-13.

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

Transmit Check Digit

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

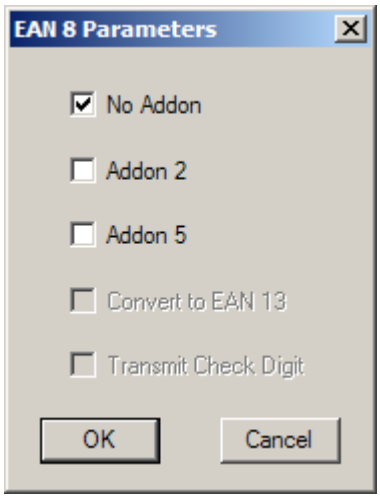
Cancel the check box if the check digit is not desired.

3.8.2 FOR 2D SCANNERS

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

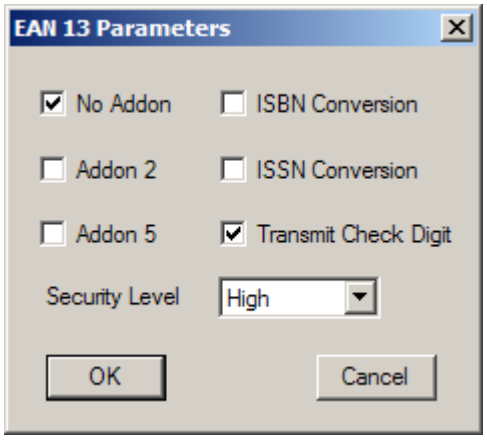
3.9 EAN-13

3.9.1 FOR 1D SCANNERS

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.



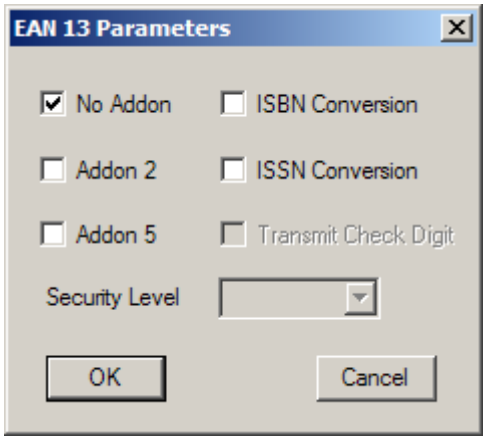
EAN-13 Family
Select the check box to enable at least one type of the EAN-13 barcodes. ▸ EAN-13 (No Addon) ▸ EAN-13 Addon 2 ▸ EAN-13 Addon 5
ISBN Conversion
Decide whether to convert the read EAN-13 barcode, which starts with 978 and 979, to ISBN.
ISSN Conversion
Decide whether to convert the read EAN-13 barcode, which starts with 977, to ISSN.
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.
Security Level
Select the security level for reading EAN-13 barcodes. High security results in slow reading speed. You will have to compromise between security and decoding speed.

3.9.2 FOR 2D SCANNERS

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
Decide whether to convert the read EAN-13 barcode, which starts with 978 and 979, to ISBN.
ISSN Conversion
Decide whether to convert the read EAN-13 barcode, which starts with 977, to ISSN.

3.10 GS1-128 (EAN-128)

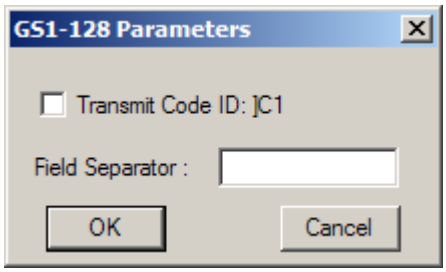
GS1-128 barcodes can be decoded only when this setting is enabled. However, for the following scanners with a specific firmware version, GS1-128 barcodes are taken as Code 128 when this setting is disabled.

- 1500 with firmware version no later than version 1.10
- 1560 with firmware version no later than version 1.01
- 1660 with firmware version no later than version 1.30

3.10.1 FOR 1D SCANNERS

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

Decide whether to include the default Code ID ("]C1") 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).

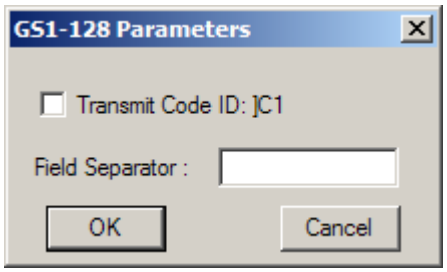
- Up to 2 characters can be chose from the Grid Control.

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.

3.10.2 FOR 2D SCANNERS

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
Decide whether to include the default Code ID ("]C1") 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

3.11.1 FOR 1D SCANNERS

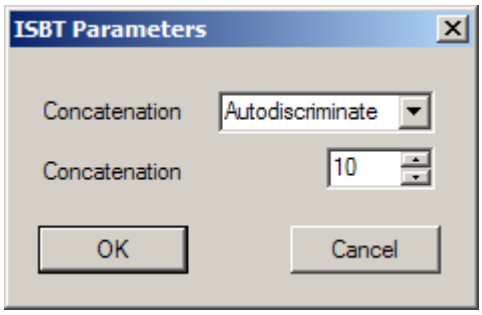
By default, the scanner is set to read ISBT 128 barcodes.

- No advanced settings are available.

3.11.2 FOR 2D SCANNERS

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

- Advanced settings are provided as shown below.



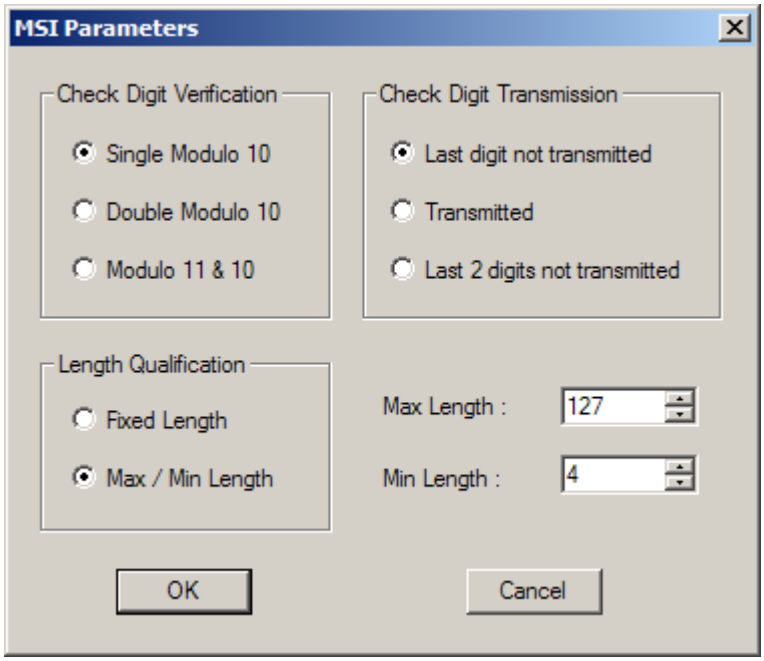
Concatenation
Decide whether to decode and concatenates pairs of ISBT barcodes. ▸ Disable ISBT Concatenation It will not concatenate pairs of ISBT barcodes it encounters. ▸ Enable ISBT Concatenation There must be two ISBT barcodes in order for the scanner to decode and perform concatenation. It does 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

3.12.1 FOR 1D SCANNERS

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

- Advanced settings are provided as shown below.

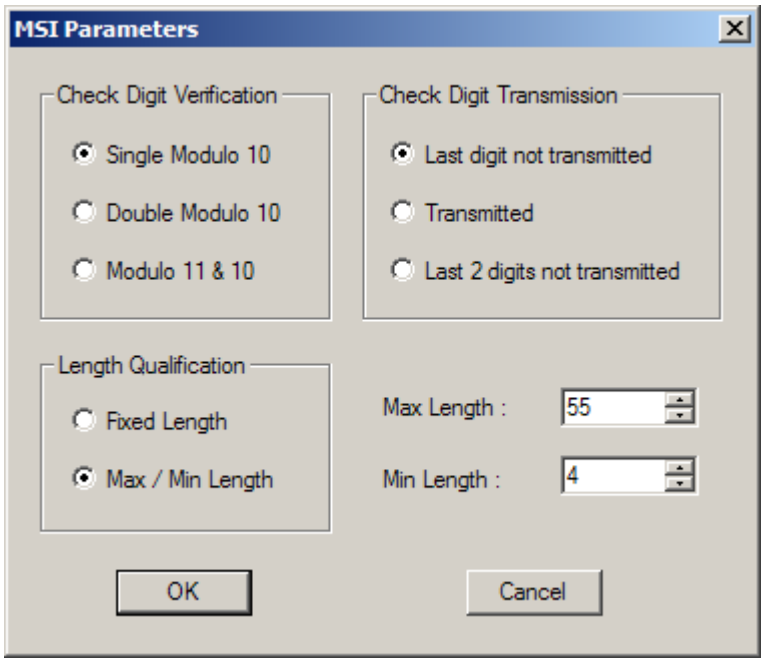


Check Digit Verification
Select the calculation used to verify MSI barcodes. If the check digit is incorrect, the barcode will not be accepted.
Check Digit Transmission
Select the way the check digits will be included in the data being transmitted.
Length Qualification
Because of the weak structure of 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.

3.12.2 FOR 2D SCANNERS

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.

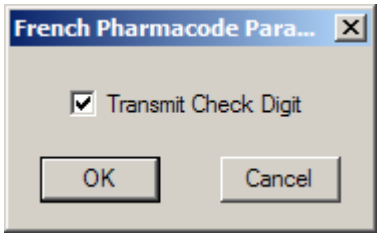
3.13 FRENCH PHARMACODE

3.13.1 FOR 1D SCANNERS

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

- Advanced settings are provided as shown below.

  Check digit verification will be performed when decoding French Pharmacode because a check digit is always included. However, it is optional to transmit the check digit.



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.

Note: These barcodes share the **Transmit Start/Stop** setting with Code 39.

3.13.2 FOR 2D SCANNERS

Not supported.

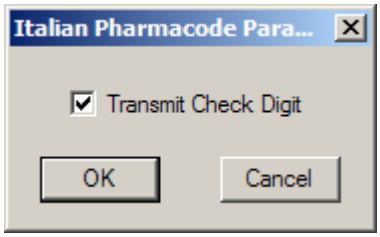
3.14 ITALIAN PHARMACODE

3.14.1 FOR 1D SCANNERS

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

- Advanced settings are provided as shown below.

  Check digit verification will be performed when decoding Italian Pharmacode because a check digit is always included. However, it is optional to transmit the check digit.



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.

Note: These barcodes share the **Transmit Start/Stop** setting with Code 39.

3.14.2 FOR 2D SCANNERS

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

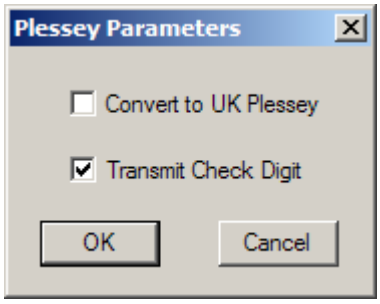
Note: Code 39 must be enabled first.

3.15 PLESSEY

3.15.1 FOR 1D SCANNERS

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

- Advanced settings are provided as shown below.



Convert to UK Plessey
Decide whether to change each occurrence of the character "A" to character "X" in the barcodes.
Transmit Check Digit
The two check digits will be included in the data being transmitted. Cancel the check box if the check digits are not desired.

3.15.2 FOR 2D SCANNERS

Not supported.

3.16 GS1 DATABAR (RSS FAMILY)

It is categorized into three groups:

Group I — GS1 DataBar Omnidirectional (RSS-14)

This group consists of the following:

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

Group II — GS1 DataBar Expanded (RSS Expanded)

This group consists of the following:

- GS1 DataBar Expanded
- GS1 DataBar Expanded Stacked

Group III — GS1 DataBar Limited (RSS Limited)

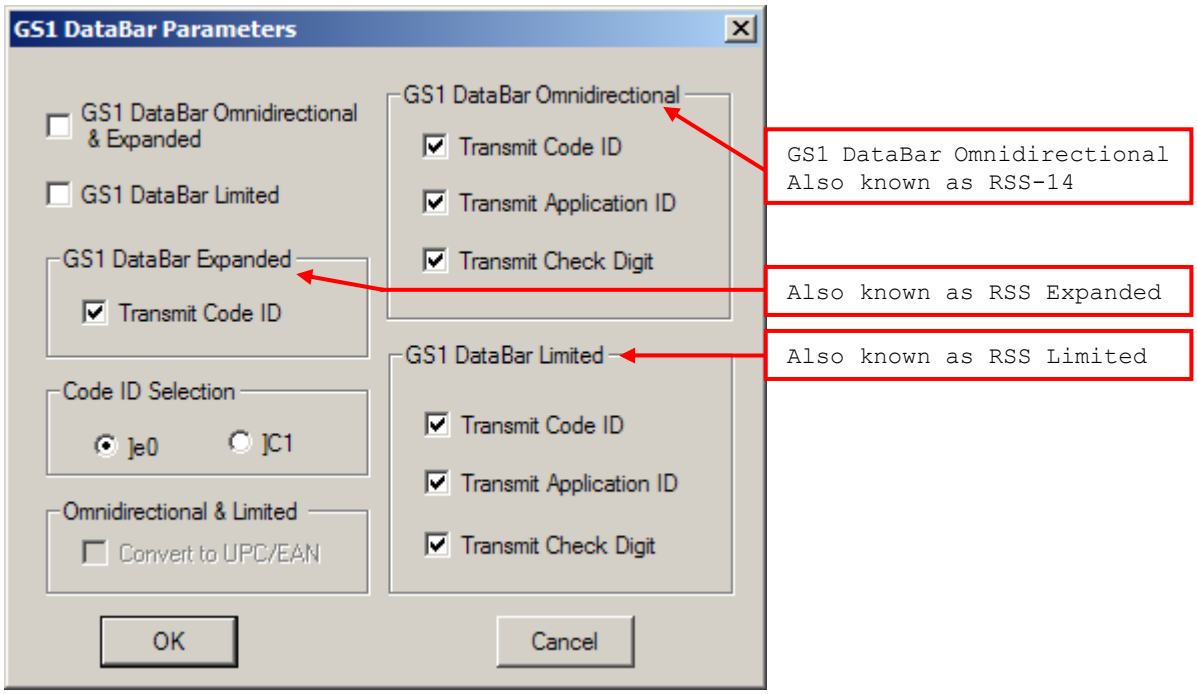
This group consists of the following:

- GS1 DataBar Limited

3.16.1 FOR 1D SCANNERS

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

- Advanced settings are provided as shown below.



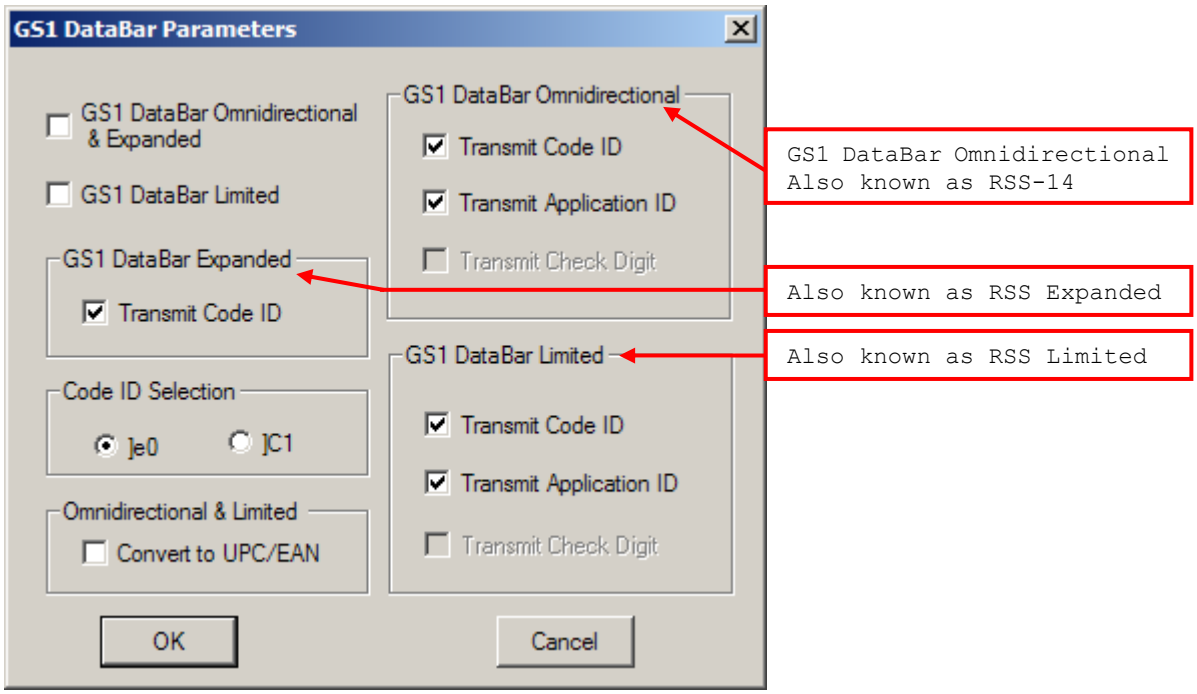
GS1 DataBar (RSS Family)
Select the check box to enable at least one group of the GS1 DataBar barcodes. ▸ GS1 DataBar Omnidirectional & Expanded for Groups I and II ▸ GS1 DataBar Limited for Group III
Code ID Selection
By default, the Code ID of GS1 DataBar (RSS) barcodes is "]e0". You may select to use "]C1" instead. ▸ "]C1" 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.

3.16.2 FOR 2D SCANNERS

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 group of the GS1 DataBar barcodes.

- GS1 DataBar Omnidirectional & Expanded for Groups I and II
- GS1 DataBar Limited for Group III

Code ID Selection

By default, the Code ID of GS1 DataBar (RSS) barcodes is "]e0". You may select to use "]C1" instead.

- "]C1" 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.

Convert to UPC/EAN

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

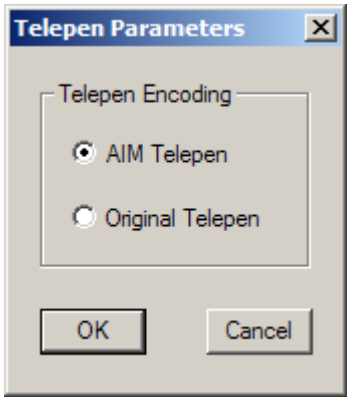
- Convert to EAN-13: It will strip the leading "010" from barcodes.
  "01" is the Application ID and must be followed by a single zero (the first digit encoded).
- Convert to UPC-A: It will strip the leading "0100" from barcodes.
  "01" is the Application ID and must be followed by two or more zeros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

3.17 TELEPEN

3.17.1 FOR 1D SCANNERS

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

- Advanced settings are provided as shown below.



Telepen Full ASCII or Numeric
Select whether AIM Telepen (Full ASCII) or Original Telepen (Numeric) is supported.

3.17.2 FOR 2D SCANNERS

Not supported.

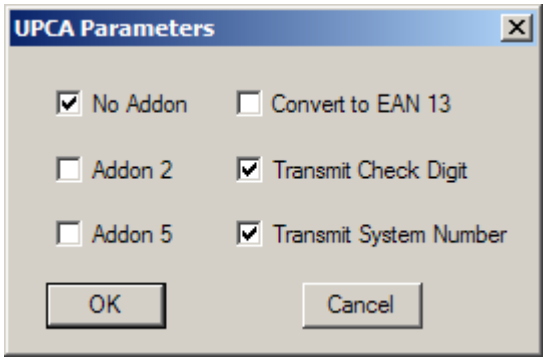
3.18 UPC-A

3.18.1 FOR 1D SCANNERS

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.



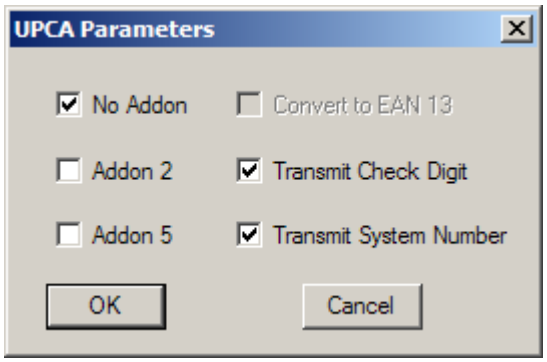
UPC-A Family
Select the check box to enable at least one type of the UPC-A barcodes. - UPC-A (No Addon) - UPC-A Addon 2 - UPC-A Addon 5
Convert to EAN-13
Decide whether to expand the read UPC-A barcode, as well as its addons, to EAN-13. - After conversion, the data follows EAN-13 format and is affected by EAN-13 programming selections (e.g. Check Digit).
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.

3.18.2 FOR 2D SCANNERS

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.

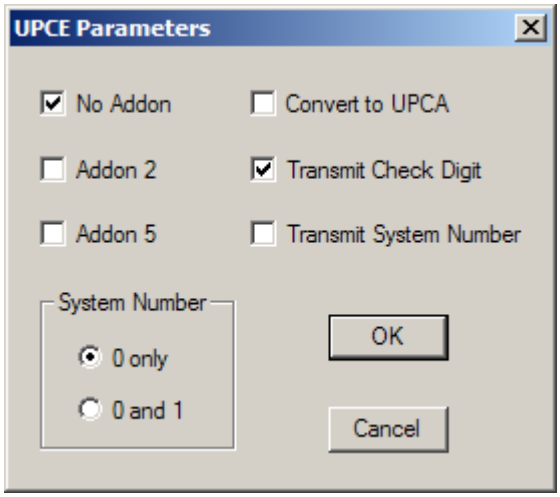
3.19 UPC-E

3.19.1 FOR 1D SCANNERS

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.



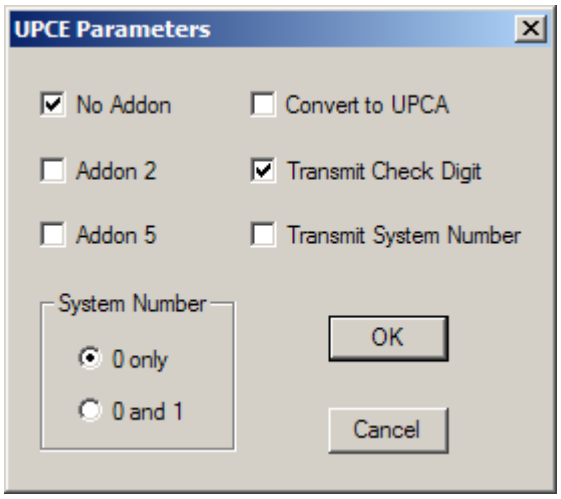
UPC-E Family
Select the check box to enable at least one type of the UPC-E barcodes. ▸ UPC-E (No Addon) ▸ UPC-E Addon 2 ▸ UPC-E Addon 5
System Number
By default, the scanner is set to read the ordinary UPC-E barcodes (= UPC-E0 only). You may change it to read both UPC-E0 and UPC-E1 barcodes.
Convert 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
Decide whether to include the system number 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.

3.19.2 FOR 2D SCANNERS

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

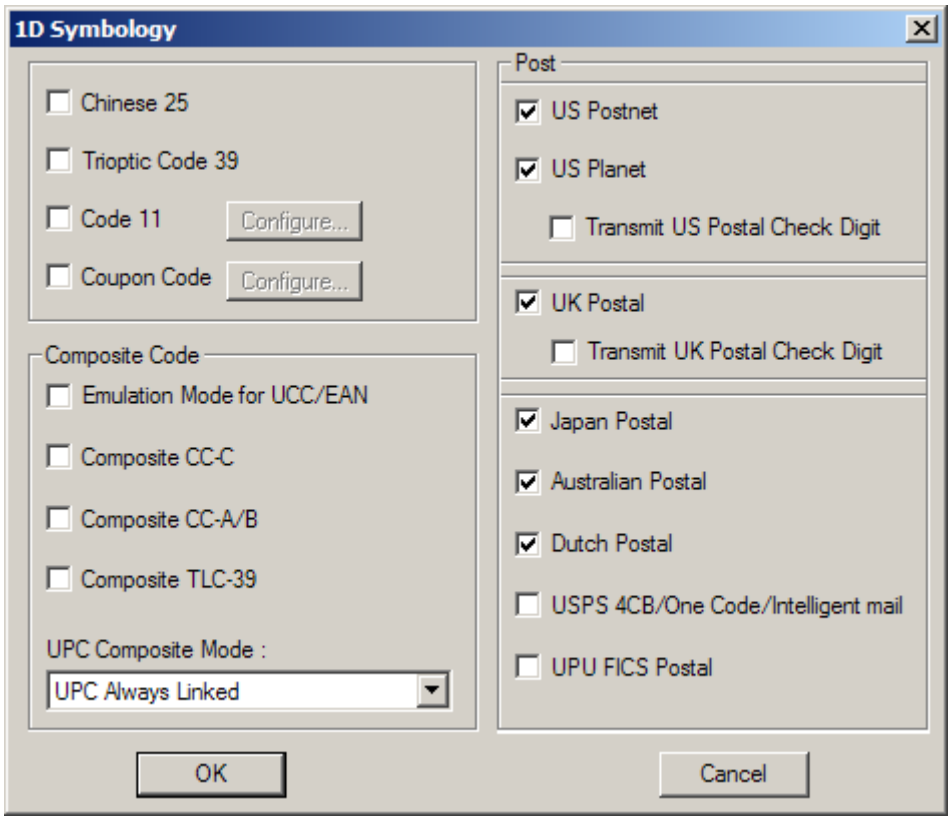
Decide whether to include the system number in the data being transmitted.

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.

3.20 1D MORE (1504/1564/1664/1704)



3.20.1 CHINESE 25

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

3.20.2 TRIOPTIC CODE 39

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

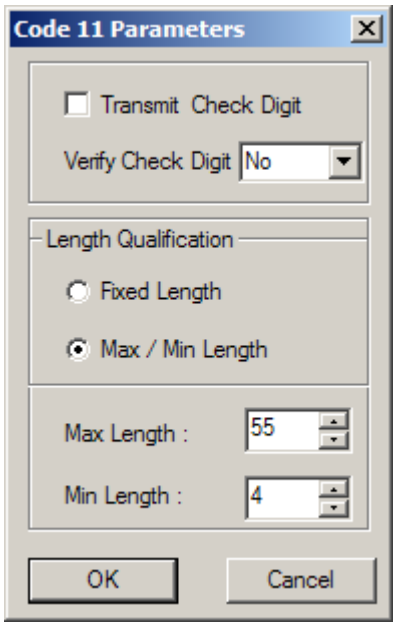
- Trioptic Code 39 is a variant of Code 39 used in the marking of computer tap cartridges. It always contains six characters.

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

3.20.3 CODE 11

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

- Advanced settings are provided as shown below.

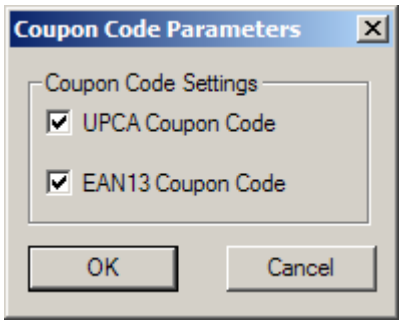


Verify Check Digit
Decide whether to verify the check digit(s). If incorrect, the barcode will not be accepted.
Transmit Check Digit
Decide whether to include the check digit(s) in the data being transmitted.
Length Qualification
To prevent the "short scan" error, configure the "Length Qualification" 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.

3.20.4 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!

3.20.5 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.

3.20.6 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.

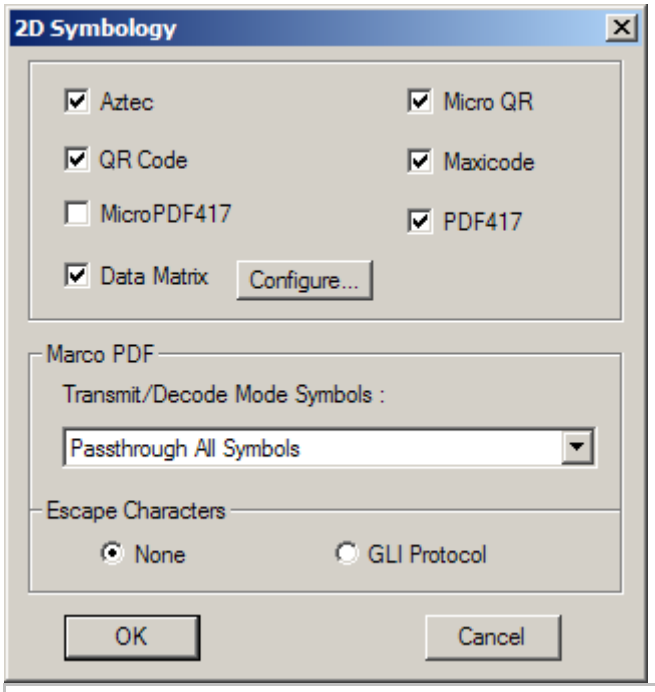
3.21 2D SYMBOLOGIES (1504/1564/1664/1704)

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

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

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 barcoes.

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!

Chapter 4

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 –

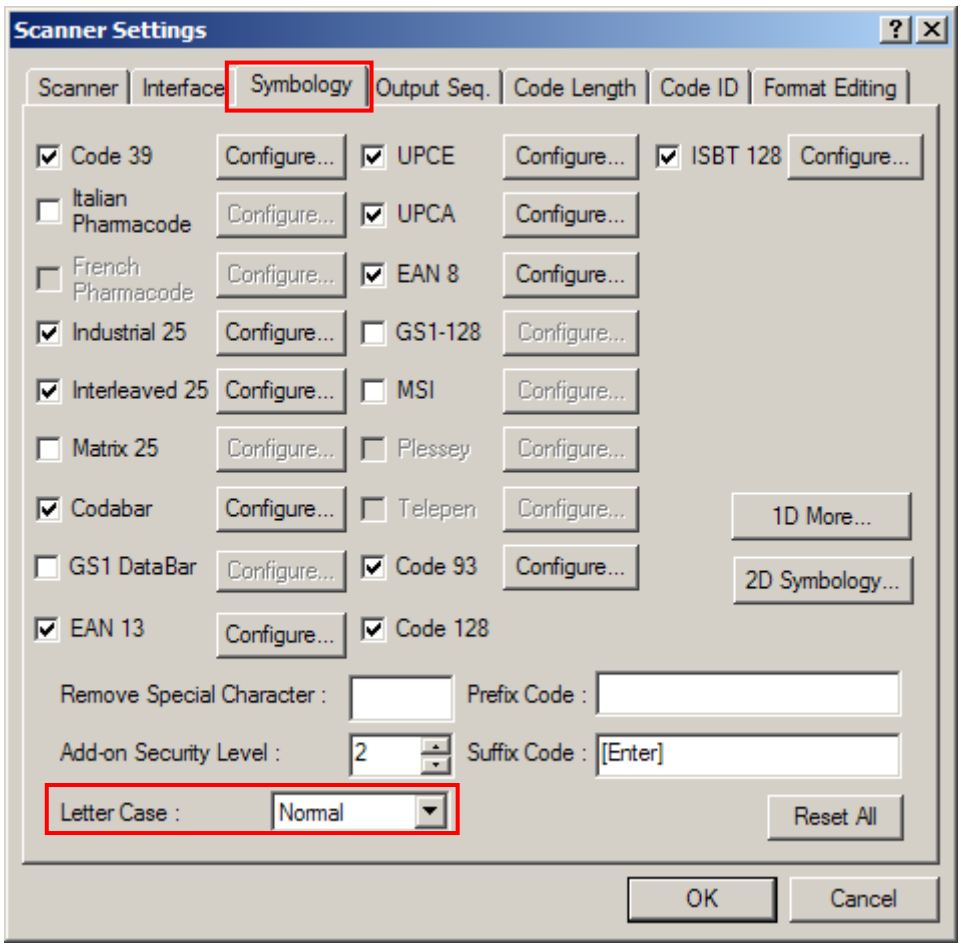
1) Perform character substitution on the data scanned.
2) Add Code ID and Code Length to the front of the data: [Code ID][Length Code][Data]
3) Process the whole data in step 2 with user formats. Data is now divided into fields by user specified rules.
4) Add Prefix Code and Suffix Code before transmission: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

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.



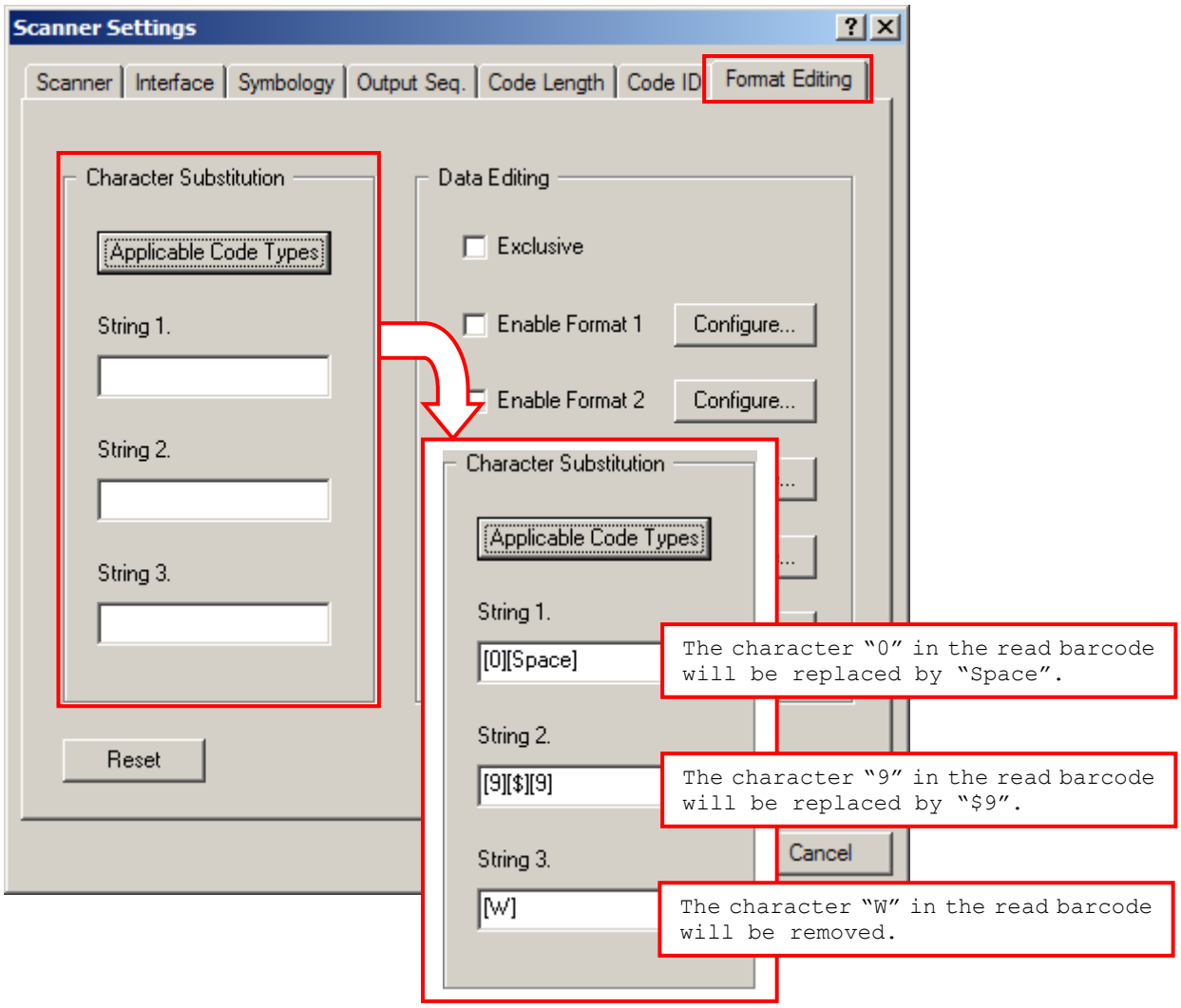
4.2 CHARACTER SUBSTITUTION

"Character Substitution" replaces a character that comes up in a collected data whatever the position is. Click on the "String" field to pop up the Grid Control window (see Appendix I Grid Control). Into such "String" field, first assign the character to be replaced. Following the previous character assigned to be replaced, in the same "String" field go on assigning one or more character(s) to replace the foregoing character.

If only one character is assigned into the "String" field, the character will be gone from the data collected when it identifies with the assigned character.

- 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", "Bluetooth HID" or "USB HID" is the interface, Key Type and Key Status will then become applicable. Decide whether to apply Key Status or not when "Normal Key" is selected for Key Type.

Key Type	Key Status
Scan Code	N/A
Normal Key	▸ Add Shift ▸ Add Left Ctrl ▸ Add Left Alt ▸ Add Right Ctrl ▸ Add Right Alt 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].

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.

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

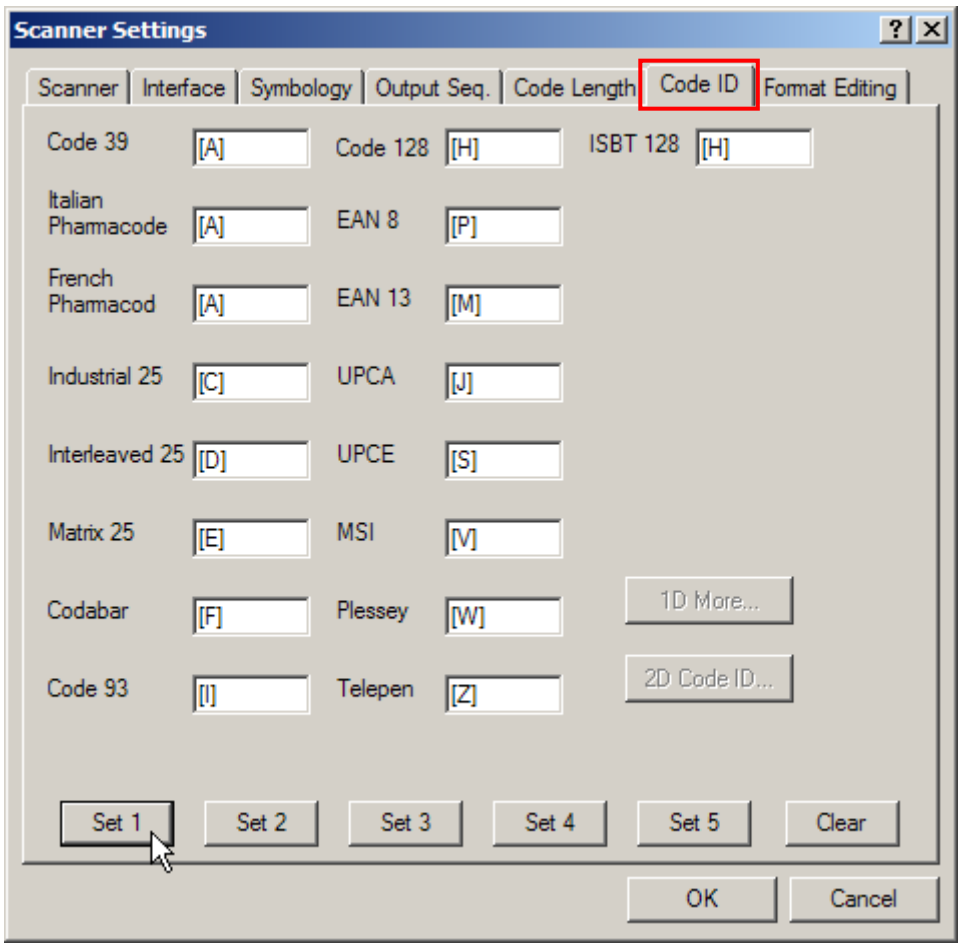
Originally, "Normal Key" is in use by default, Up to eight characters can be chose from the Grid Control. For example, "Barcode_", and you will have the string appear in front of the barcode read, like this — "Barcode_1234567890".

If "Keyboard Wedge", "Bluetooth 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	▸ Add Shift ▸ Add Left Ctrl ▸ Add Left Alt ▸ Add Right Ctrl ▸ Add Right Alt Refer to Appendix I Grid Control.

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

For 1504/1564/1664/1704, click the button [1D More…] or [2D Code ID…] for more symbologies.

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

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.

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

If "Keyboard Wedge", "Bluetooth HID" or "USB HID" is the 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.

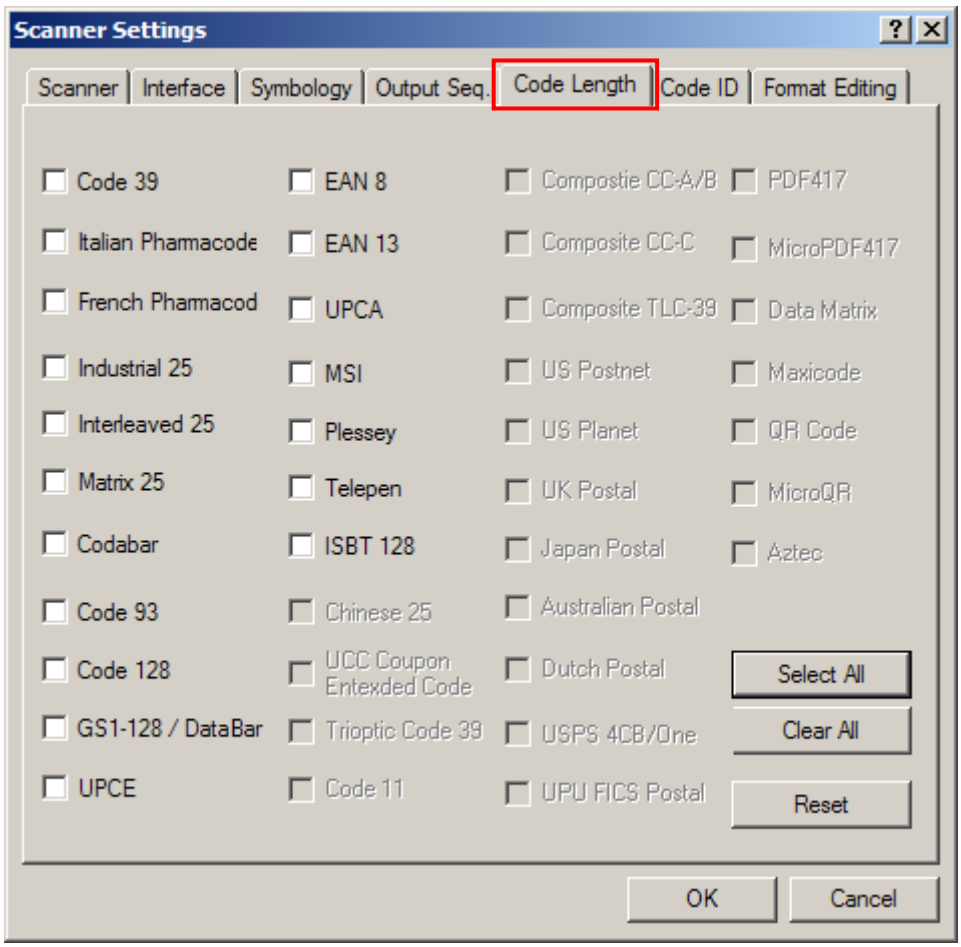
Key Type	Key Status
Scan Code	N/A
Normal Key	▸ Add Shift ▸ Add Left Ctrl ▸ Add Left Alt ▸ Add Right Ctrl ▸ Add Right Alt Refer to Appendix I Grid Control.

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 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.

1504/1564/1664

For 1504/1564/1664 to concatenate barcodes, the maximum output data length of all the barcodes is 10 KB after configuration. When the data length exceeds 10 KB, the concatenation will not apply.

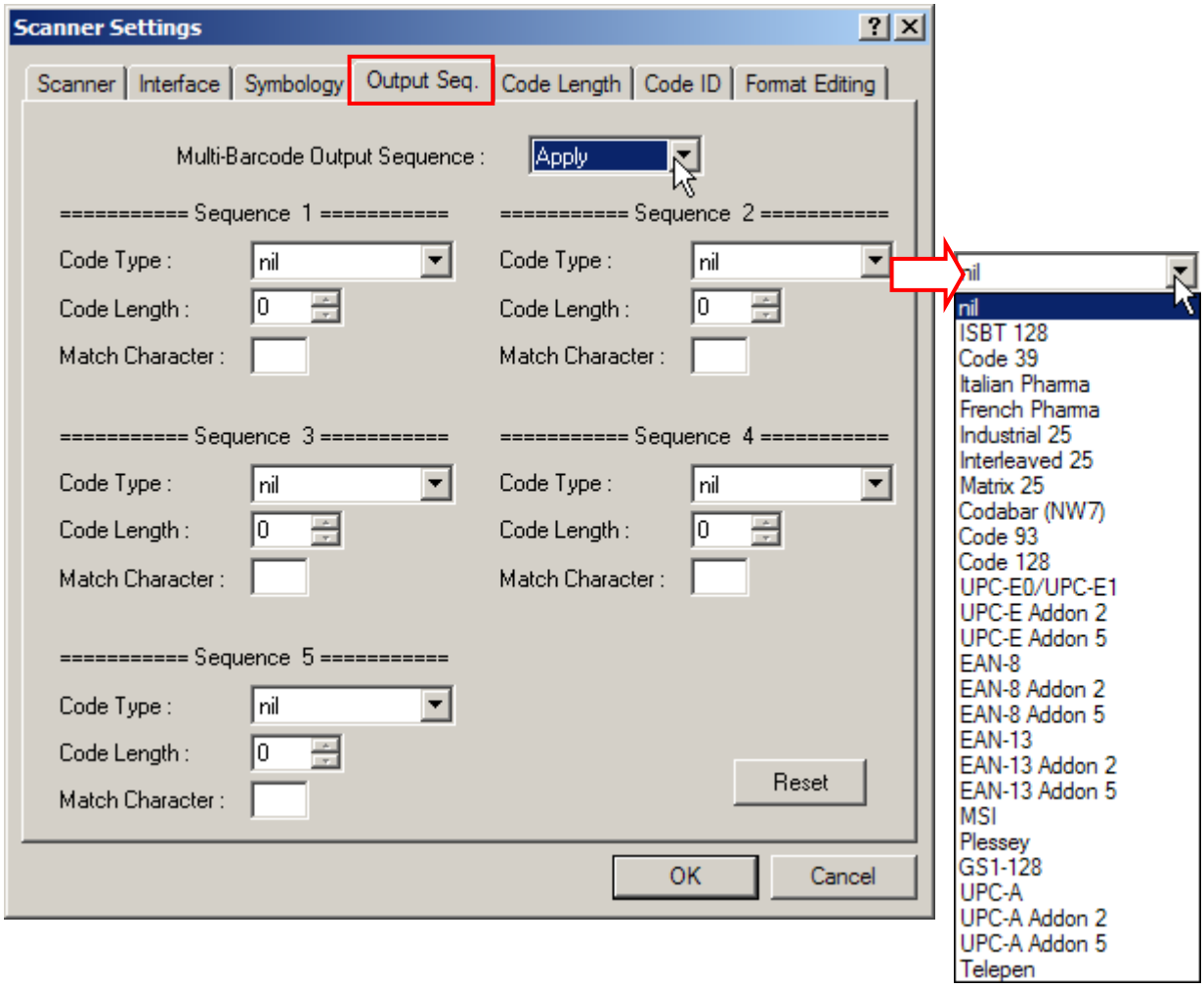
1704

For 1704 to concatenate barcodes, the maximum output data length of all the barcodes is 2042 bytes after configuration. When the data length exceeds 2042 bytes, the concatenation of barcodes will not apply

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

The barcodes 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.

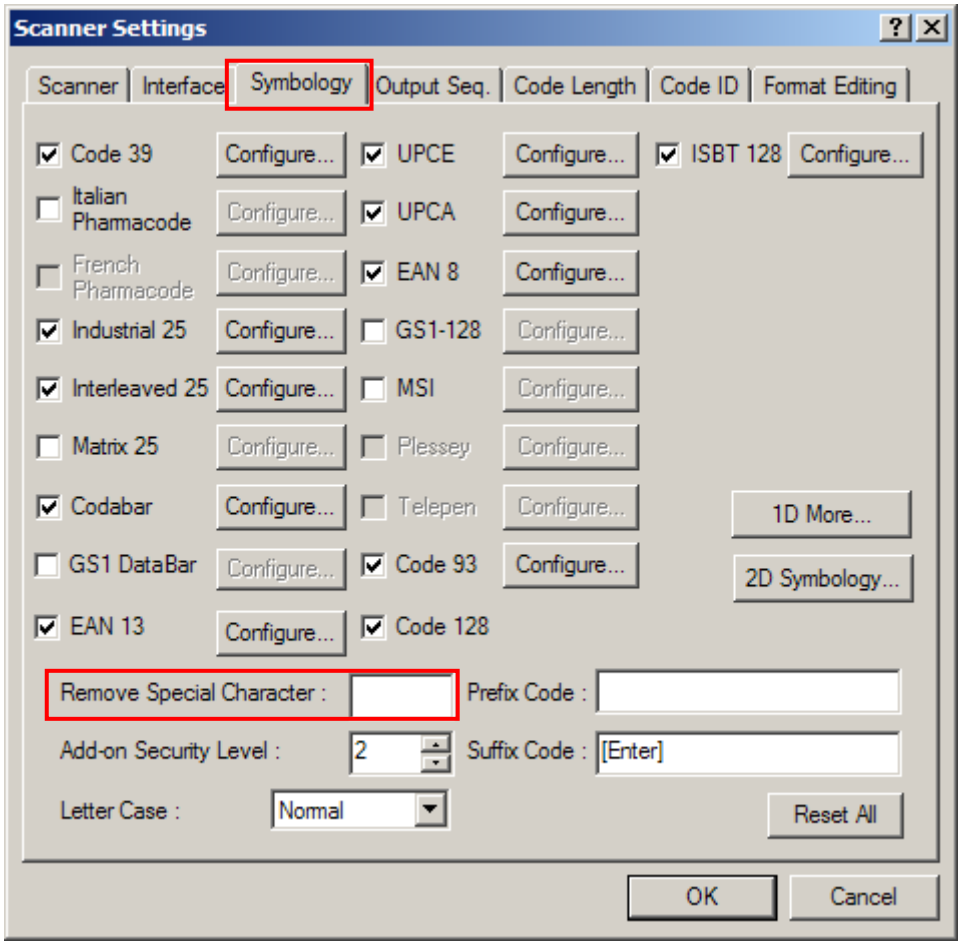


By default, the output sequence editing of the concatenation of barcodes is not applied – "Ignored". When "Enforce" is selected, all barcodes read by the scanner must meet with the criteria for the concatenation. If data is found excluded from all output sequence sets (= not meeting with the criteria), 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 (see Appendix I 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.



Chapter 5

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.

1504/1564

For 1504/1564 to concatenate barcodes, 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.

1704

For 1704 to apply any editing format, the maximum output data length of a barcode is 4084 bytes after configuration. When the data length exceeds 4084 bytes, editing format will not take effect.

The maximum output data length will be reduced to 2042 bytes if Multi-Barcode Mode or Multi-Barcode Editor is in use.

IN THIS CHAPTER

5.1 FORMAT SELECTION

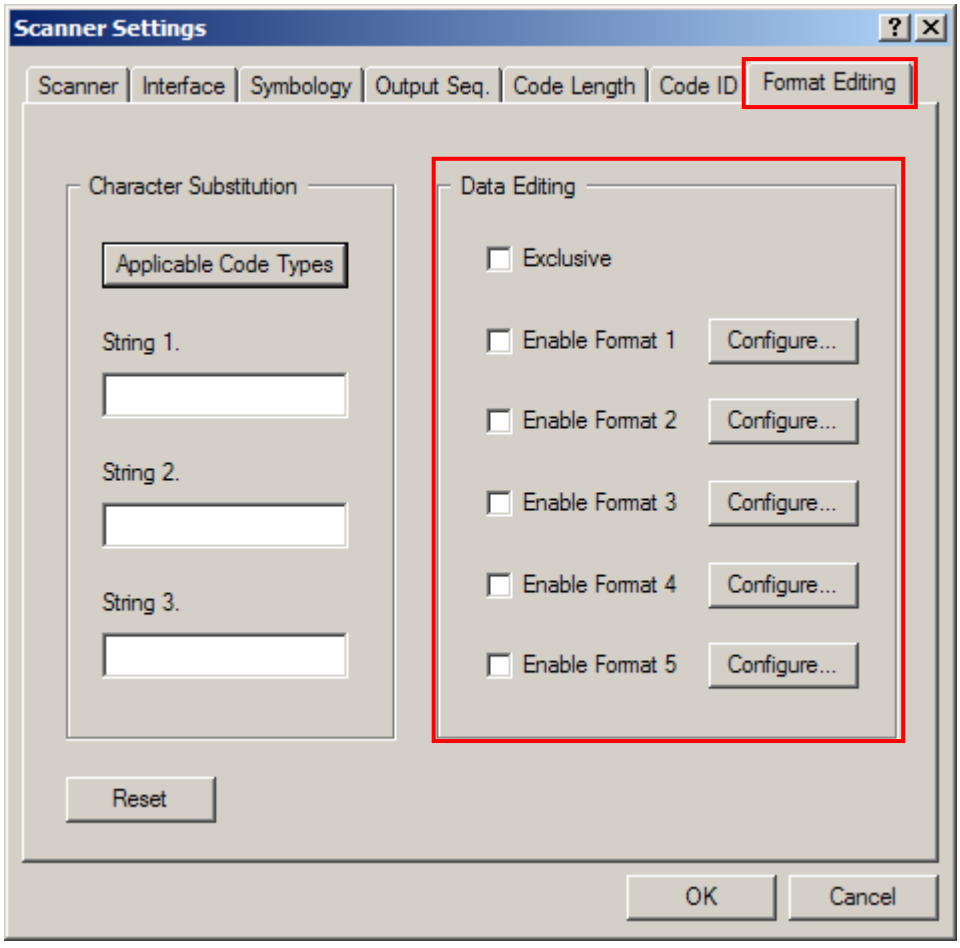
5.1.1 ENABLE EDITING FORMATS

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.

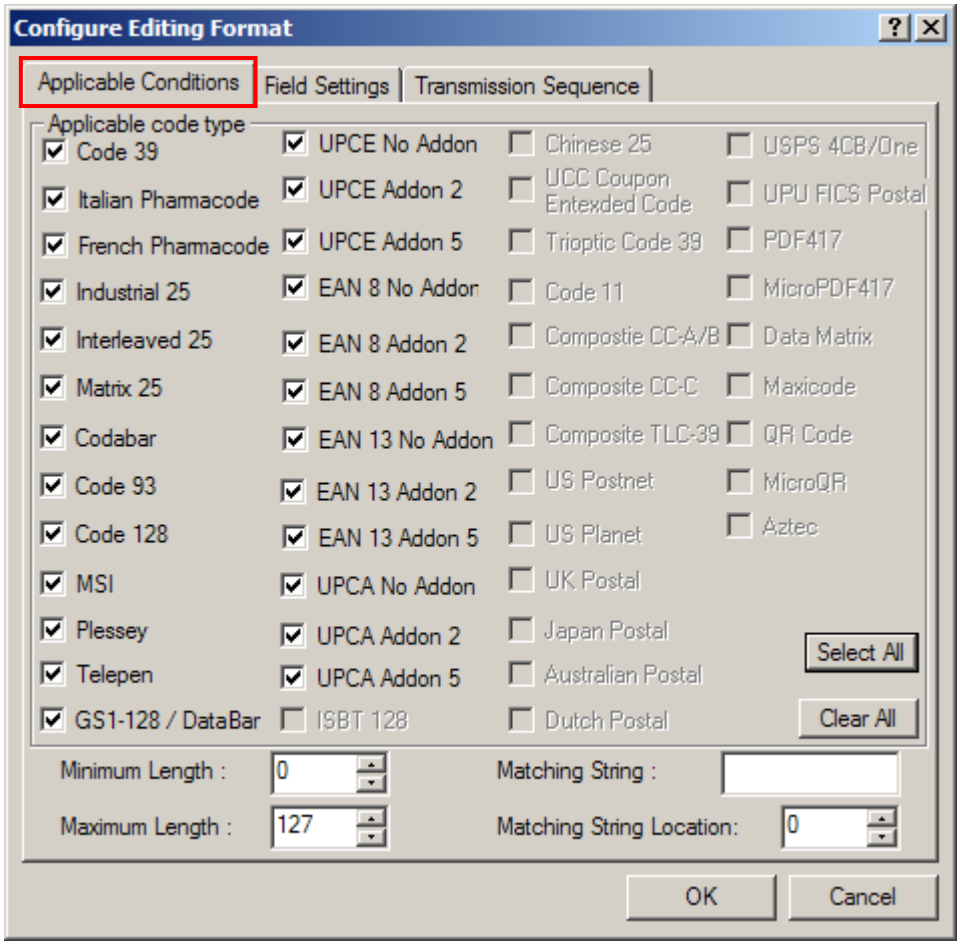


5.2 CONFIGURE EDITING FORMAT

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.

Note: For quick configuration, you may first clear all, and then select the desired symbologies. However, you must have at least one symbology selected.

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.

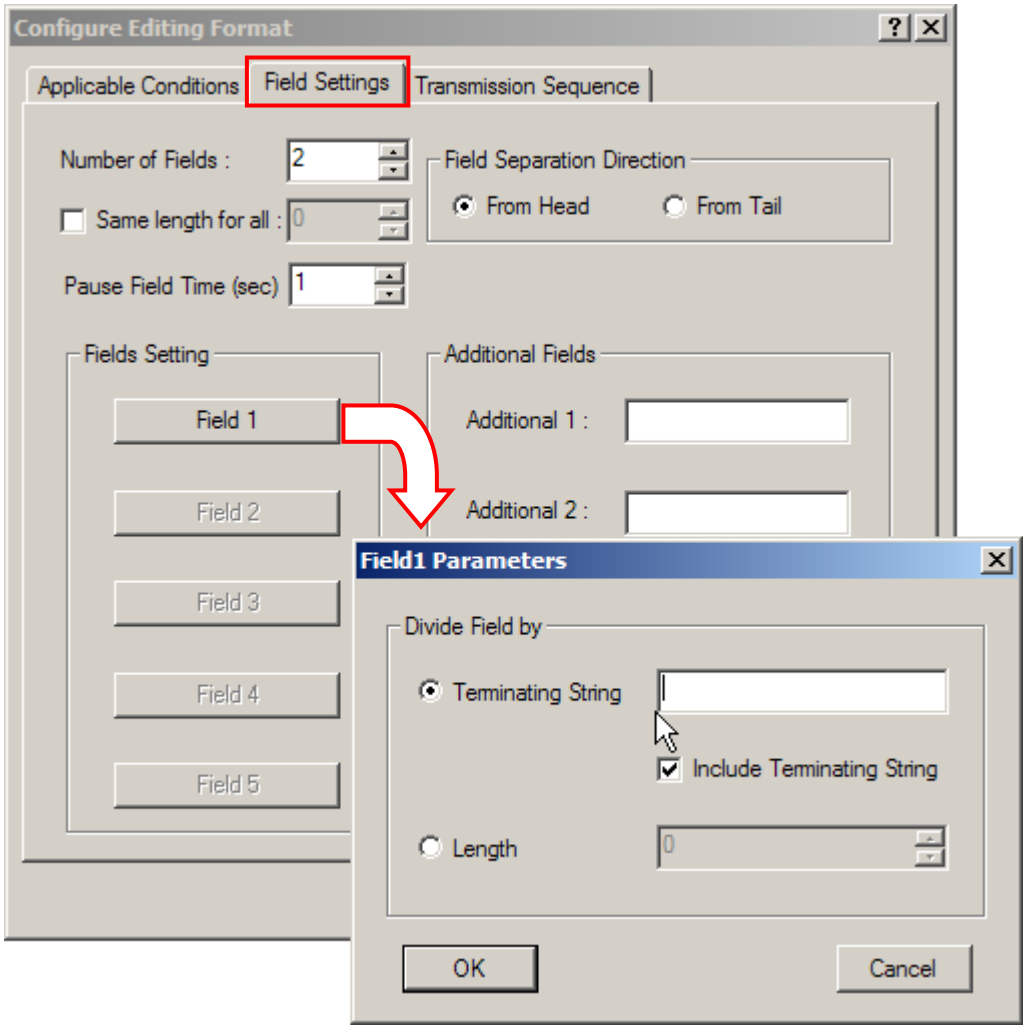
- Enter a value from 0 to 254.
- When zero is given to both, the scanner will not perform the length qualification.

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. Refer to 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.
Pause Field Time
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. Refer to 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

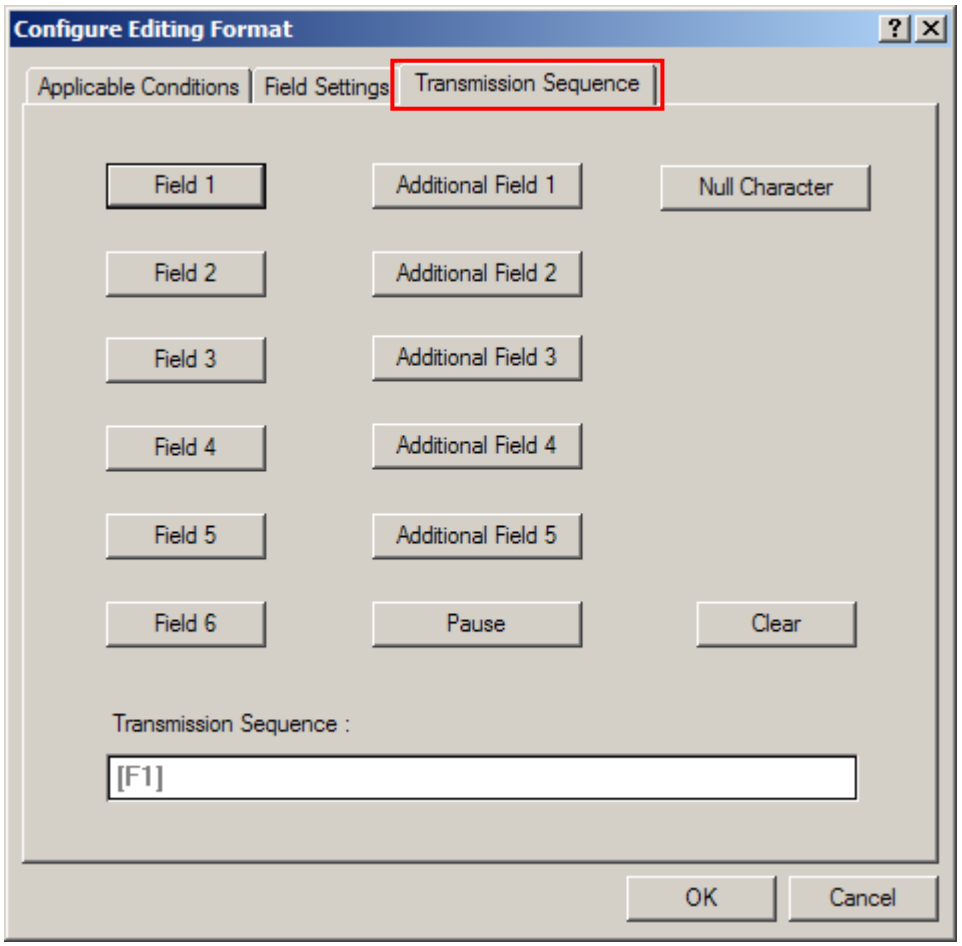
Up to five additional fields can be created for each editing format; each of them is numbered from AF1 to AF5 accordingly. To configure the Additional Fields setting, click the associated field and choose up to four characters from the pop-up window of Grid Control. Refer to Appendix I Grid Control.

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, user 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.

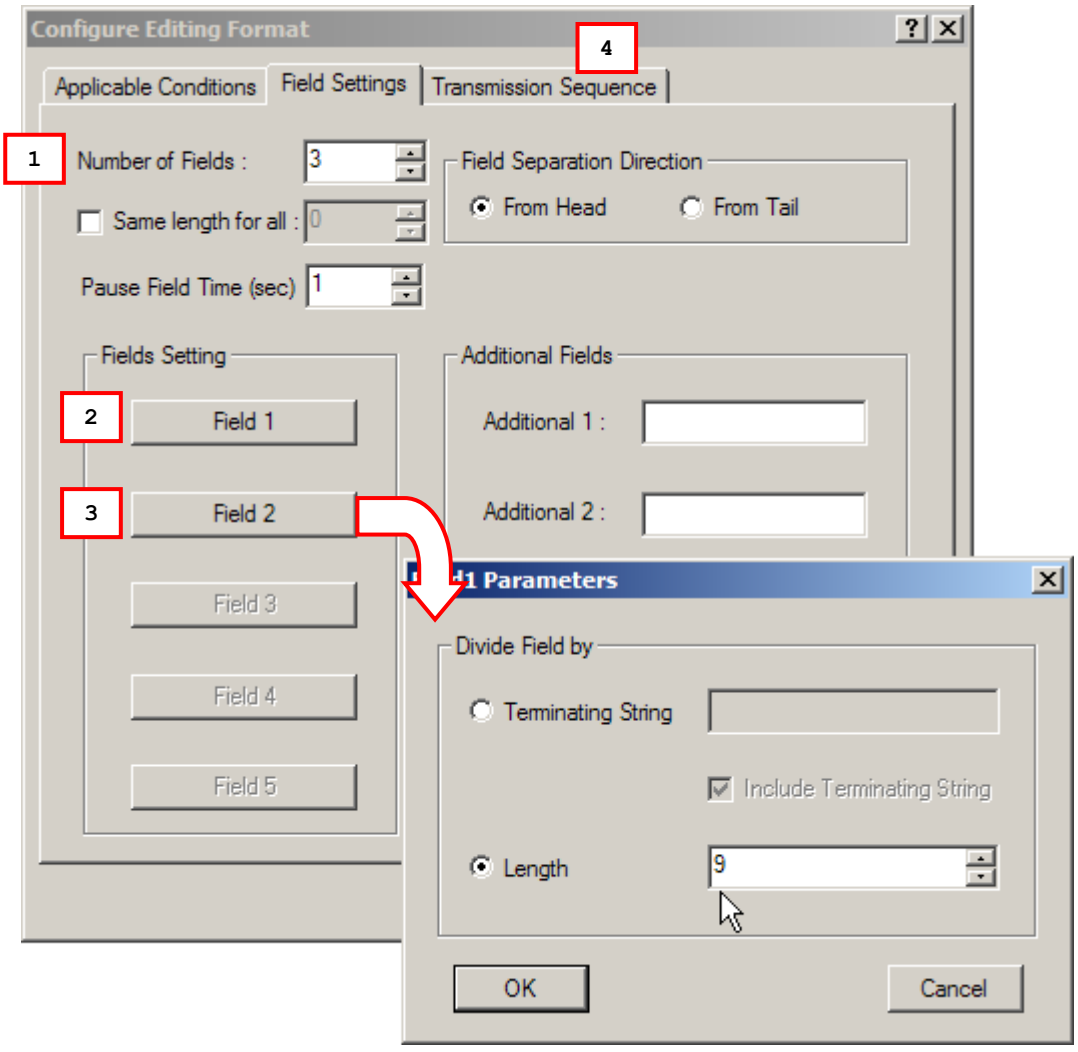


5.2.4 EXAMPLES

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 "10".
   Field1 = from the 1st character to the 10th character
3. Set Field2 Parameters: divide field by Length, and set length to "9".
   Field2 = from the 11th 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:

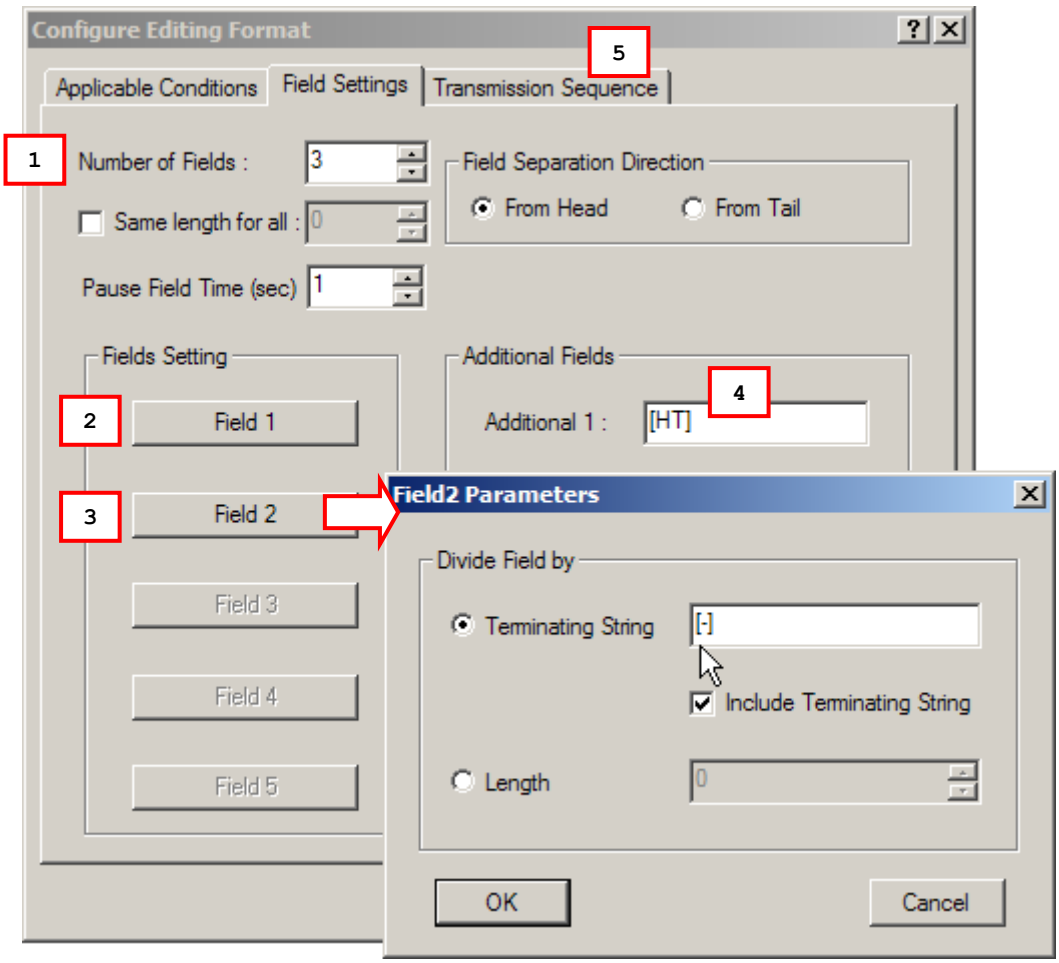
— The item number goes first, then a TAB character, followed by the date code, then another TAB character, and finally the quantity information.

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 1st character to the 6th character
3. Set Field2 Parameters: divide field by Terminating String, and set the string to "-".

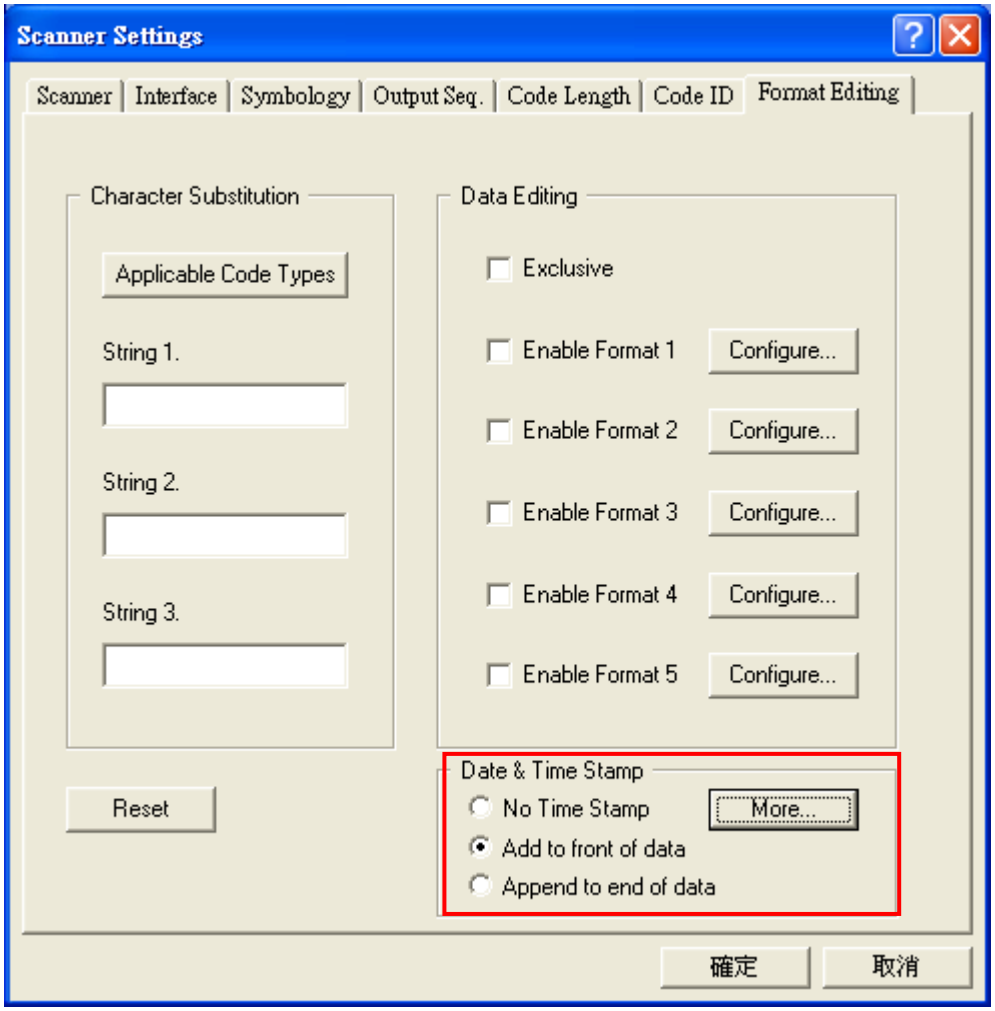
   Field2 = from the 7th character to the "-" character
4. Set Additional Field 1 to one "TAB" character.
5. Set Transmission Sequence to transmit "F2 A1 F1 A1 F3".



5.3 DATE & TIME STAMP (1664)

For your better analysis of the data collected, the 1664 supports affixing date/time information to each piece of scanned data gone through Format Editing already.

On the Format Editing tabbed page, there is a [Date & Time Stamp] group box encloses a set of related options to enable/disable date/time info and define the format. Date & Time Stamp is disabled by default.



To set the clock / calendar time for the scanner, select **Tools** | **Scanner RTC setup** from the menu bar of the ScanMaster. See also Tools Menu.

Reference the following and make the setting best suits your needs.

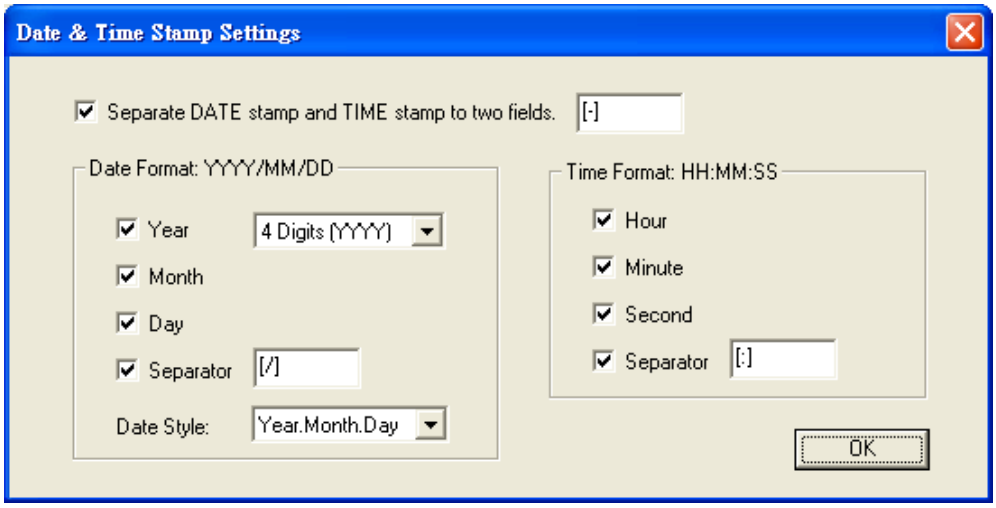
OPTIONS

The options featured are "No Time Stamp", "Add to front of data", and "Append to end of data":

Option	Description
No Time Stamp	Disables Date & Time Stamp. The default.
Add to front of data	Enables Date & Time Stamp and prefixes date/time information to each data decoded and formatted already.
Append to end of data	Enables Date & Time Stamp and suffixes date/time information to each data decoded and formatted already.

MORE BUTTON

A More button is presented within the [Date & Time Stamp] group box. Press it to pop up the [Data & Time Stamp Settings] dialog and proceed to define the output format you desire for the date/time info.



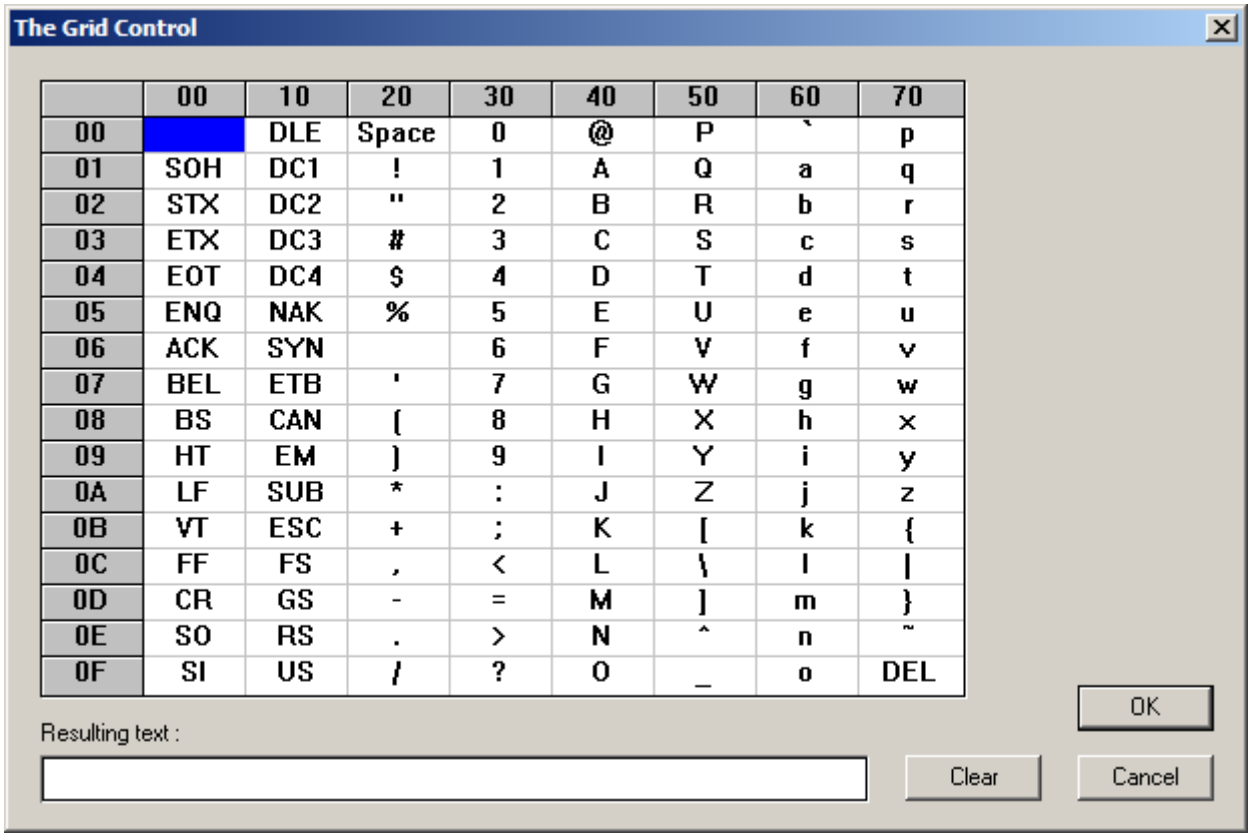
Appendix I

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



	00	10	20	30	40	50	60	70
00		DLE	Space	0	@	P	`	p
01	SOH	DC1	!	1	A	Q	a	q
02	STX	DC2	"	2	B	R	b	r
03	ETX	DC3	#	3	C	S	c	s
04	EOT	DC4	$	4	D	T	d	t
05	ENQ	NAK	%	5	E	U	e	u
06	ACK	SYN		6	F	V	f	v
07	BEL	ETB	'	7	G	W	g	w
08	BS	CAN	(	8	H	X	h	x
09	HT	EM	)	9	I	Y	i	y
0A	LF	SUB	*	:	J	Z	j	z
0B	VT	ESC	+	;	K	[	k	{
0C	FF	FS	,	<	L	\	l	|
0D	CR	GS	-	=	M	]	m	}
0E	SO	RS	.	>	N	^	n	~
0F	SI	US	/	?	O	_	o	DEL

Note: For a TAB character, click “HT”.

SPECIAL GRID CONTROL FOR KEYBOARD INTERFACE

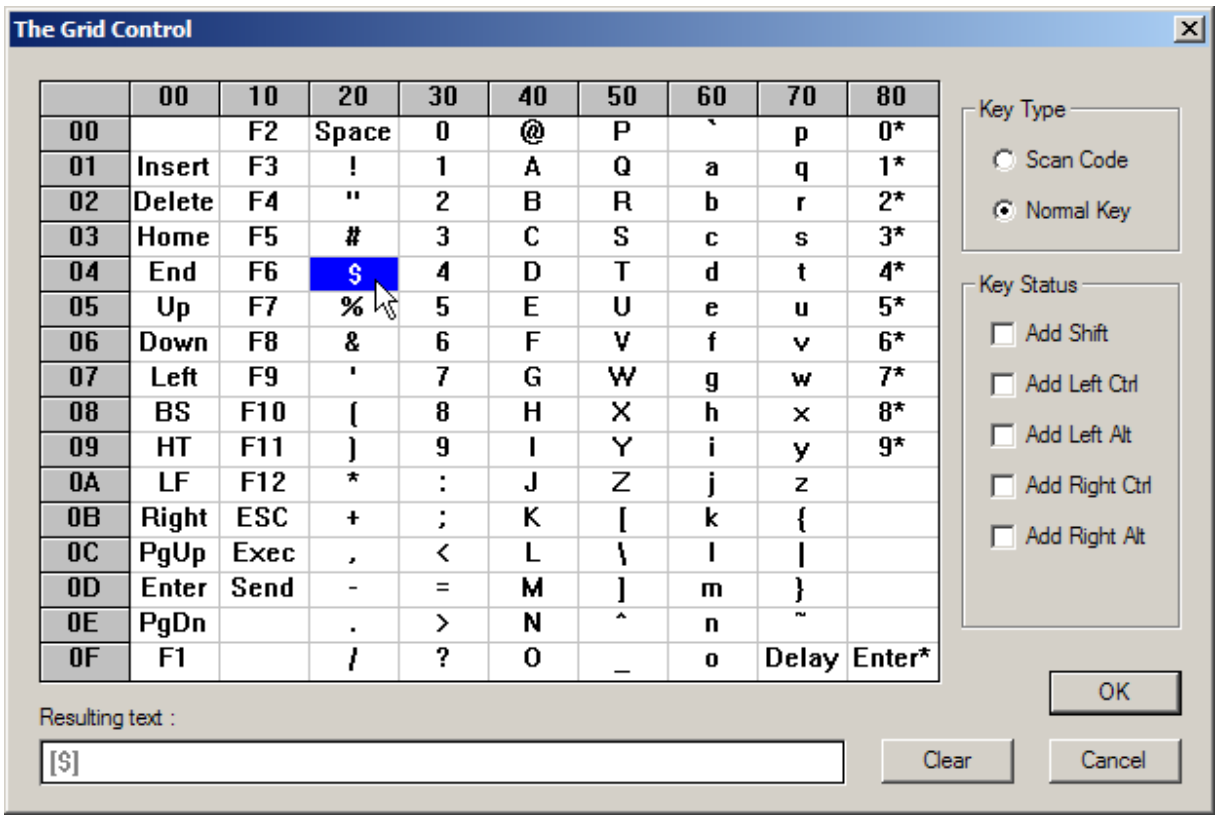
This is used for the following settings:

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

Note: This is available only when "Keyboard Wedge", "Bluetooth 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.



	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*

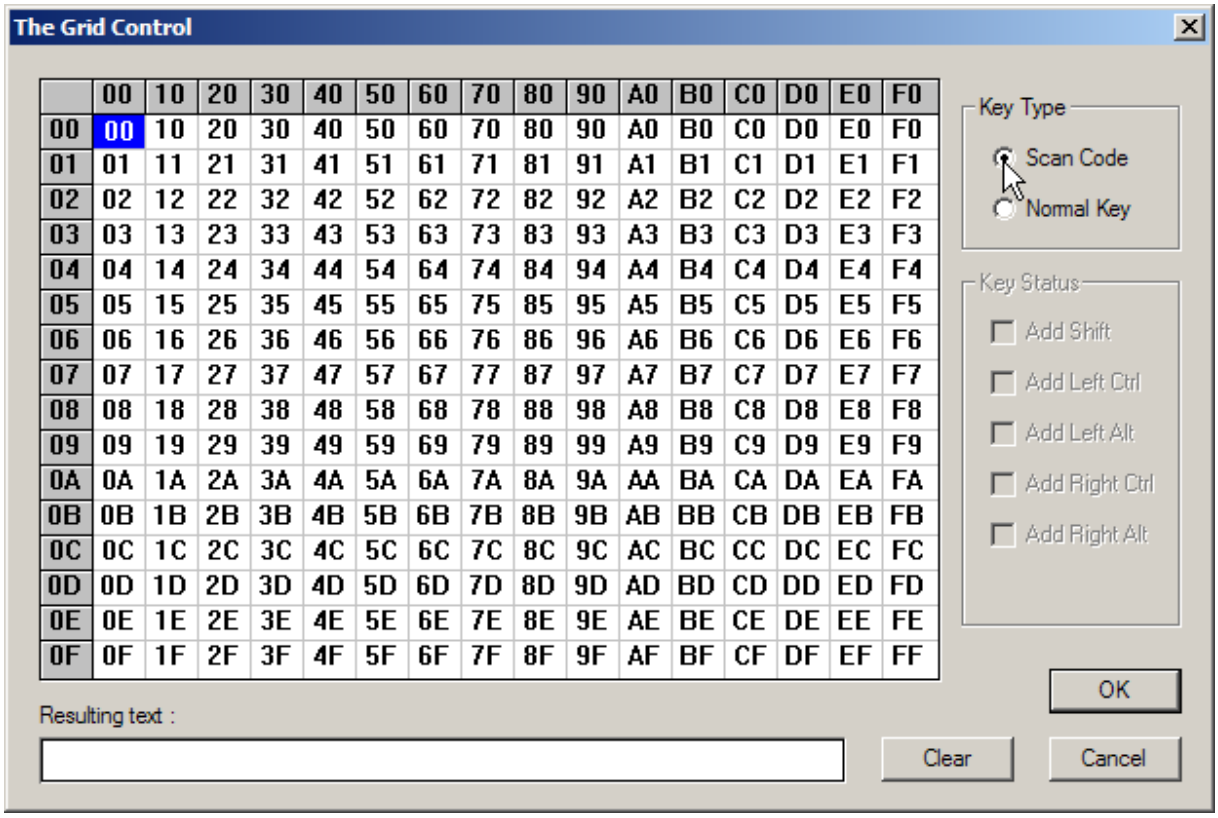
Note: For a TAB character, click "HT".

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.

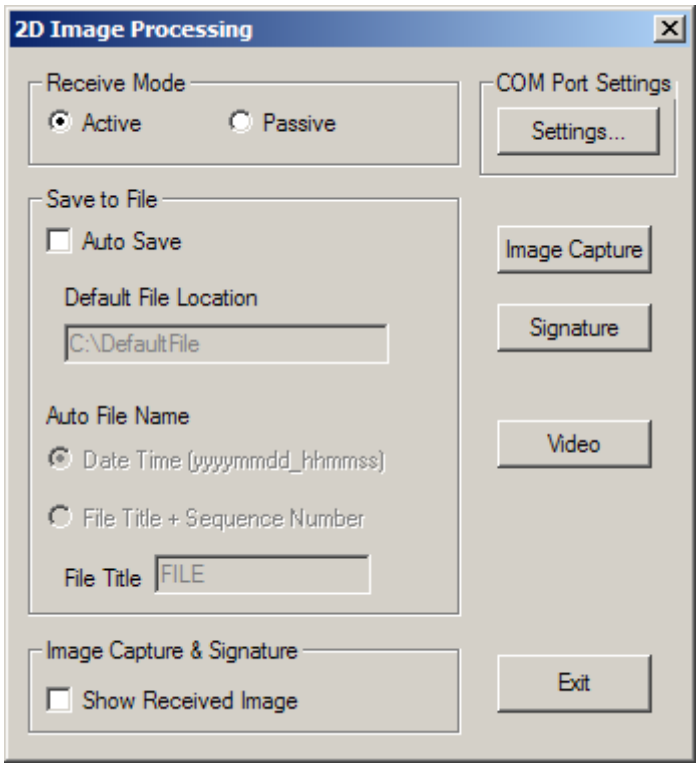


	00	10	20	30	40	50	60	70	80	90	A0	B0	C0	D0	E0	F0
00	00	10	20	30	40	50	60	70	80	90	A0	B0	C0	D0	E0	F0
01	01	11	21	31	41	51	61	71	81	91	A1	B1	C1	D1	E1	F1
02	02	12	22	32	42	52	62	72	82	92	A2	B2	C2	D2	E2	F2
03	03	13	23	33	43	53	63	73	83	93	A3	B3	C3	D3	E3	F3
04	04	14	24	34	44	54	64	74	84	94	A4	B4	C4	D4	E4	F4
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

Appendix II

2D IMAGE PROCESSING (1704 ONLY)

Go to **Tools Menu | 2D Image Processing** to start with the retrieval of signature, image or video. Refer to Tools Menu and 1.13 2D Decode Settings (1704).



TRANSMISSION PROPERTIES

RECEIVE MODE

Both active and passive modes are supported.

Active Mode
Application on the host will send command to instruct the scanner to stay in a specific operation mode (Image Mode/Video Mode/Signature Capture) and wait for image data.
Passive Mode
First, it requires the scanner to read the setup barcodes for the desired operation — signature Capture, Image Mode or Video Mode. Then, it will passively wait for image data.

COM PORT SETTING

For signature capture in Decode Mode, Image Mode and Video Mode, the output interface must be RS-232 or USB Virtual COM.

- Configure the COM port properties on your computer. For USB Virtual COM, specify COM port for connection and ignore the rest settings.

SAVE TO FILE

Auto Save

Select the check box so that it will automatically save to file upon completion of receiving image or video.

Default Image Location

When Auto Save is enabled, specify the default file location for storing received image or video.

- By default, it is set to save files to "C:\\DefaultFile". When it failed to save files to user-defined folder as specified, the image or video will be saved to the default folder.

AUTO FILE NAME

When Auto Save is enabled, specify the rule for creating a filename.

Use Date & Time: YYYYMMDDhhmmss

The filename will be "YYYYMMDD_hhmmss".

User-defined Format: File Title + 4 digits

The filename will be "File Title" plus 4-digit sequential number starting from "0001" to "9999", such as "YourFileTitle0001".

Note: For Image Mode, the image file can be saved as JPEG, BMP or TIFF files.
For Video Mode, the video file is saved as AVI files.

IMAGE CAPTURE & SIGNATURE

Show Received Image

Select the check box so that it will automatically display the image upon completion of receiving image.

START 2D IMAGE PROCESSING

RETRIEVING AN IMAGE

1) Click Image Capture to start with image processing in Image Mode.
2) Depending on the Receive Mode:

Active Mode

Press the trigger for the scanner to capture and send an image.

Passive Mode

First, it requires the scanner to read the following setup barcodes one by one.

Then, press the trigger for the scanner to capture and send an image.

Enter Setup

Image Mode

109920

Update

109999

3) Once the software application finishes the task of receiving an image, the scanner returns to Decode Mode.

You may click [Abort] at any time to end the task.

RETRIEVING A VIDEO

1) Click 

to start with image processing in Video Mode.

2) Depending on the Receive Mode:

Active Mode

Press the trigger for the scanner to temporarily enter Video Mode.

Passive Mode

First, it requires the scanner to read the following setup barcodes one by one.

Then, press and hold the trigger for the scanner to behave as a video camera.

Enter Setup

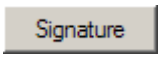
Video Mode

Update

3) When you release the trigger, the scanner returns to Decode Mode.

You may click [Abort] at any time to end the task.

RETRIEVING A SIGNATURE

1) Click 

to start with image processing in Decode Mode.

2) Depending on the Receive Mode:

Active Mode

Press the trigger for the scanner to capture and send a signature.

Passive Mode

First, it requires the scanner to read the following setup barcodes one by one.

Then, press the trigger for the scanner to capture and send a signature.

Enter Setup

Enable Signature Capture

109922

Update

109999

3) If signature capture is not desired any more, you may click [Abort] at any time to end the task. Alternatively, you may have the scanner read the setup barcode:

Disable Signature Capture

109923