

CipherLab

User Guide

ScanMaster for Scanner Configuration

1 Series Barcode Scanners:

1000A, 1500P, 1502 (1D, tethered)
1560P, 1562, 1660, 1661, 1662, 1663 (1D, cordless)
1504A, 1504P(B), 1704 (2D, tethered)
1564A, 1664 (2D, cordless)

2 Series Barcode Scanners:

2500 (1D, tethered), 2560 (1D, cordless)
2504, 2504MR (2D, tethered), 2564, 2564MR (2D, cordless)

Version 2.02



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Release Notes

| Version | Date | Notes |
|---------|---------------|---|
| 2.02 | Mar. 05, 2021 | <ul style="list-style-type: none"> ▶ Modified: 1.1 Scanning Mode – table updated (Momentary, Release modes added) ▶ New: 1.2.7 Trigger Force Power Off ▶ Modified: 1.11 Picklist Mode – moved to 1.21 2D Decode Settings (Scanners except 1704) ▶ New: 1.14 BEL Beep ▶ New: 1.15 Power On Beep ▶ New: 1.16 1D Mobile Display Mode ▶ New: 1.17 Aim Submodes ▶ Modified: 1.21 2D Decode Settings (Scanners except 1704) – Illumination Brightness/DPM Mode & Picklist Mode added ▶ Modified: 2.4 Bluetooth HID – screenshot updated ▶ Modified: 2.4.13 Role – default by master ▶ New: 2.10.7 Keyboard Layout ▶ Modified: 3.5 Code 39 – start/stop security level/quiet zone check added ▶ Modified: 3.16 GS1 DataBar (RSS Family) – screenshot and description updated ▶ Modified: "4.9 AIM Code ID" moved to 4.5.3 AIM Code ID ▶ Modified: 5.1.2 Exclusive Data Editing – screenshot updated |
| 1.99 | Mar. 08, 2019 | <ul style="list-style-type: none"> ▶ Modified: 2.1.1 Keyboard Type – supported keyboard type updated with Switzerland French & Czech ▶ Modified: 2.1.16 UTF-8 Convert – supported keyboard type updated with Switzerland French & Czech ▶ Modified: 2.4.1 Keyboard Type – supported keyboard type updated with Switzerland French & Czech ▶ New: 2.4.17 UTF-8 Convert – supported keyboard type (65/66/78/81/83/88/89/91/92) ▶ Modified: 2.10.6 UTF-8 Convert – supported keyboard type updated with Switzerland French & Czech ▶ Modified : 3.21 2D Symbolologies (2D Models) – Output ECI option added in Data Matrix |
| 1.98 | Dec. 21, 2018 | <ul style="list-style-type: none"> ▶ New: add 1000A/2500/2560/2504/2504MR/2564/2564MR models ▶ Removed: 1070/1500/1504/1504SE/1560/1564 models ▶ Modified: 2.1.16 UTF-8 Convert – supported keyboard type updated & Output Unicode added ▶ New: 2.9 USB Virtual COM CDC via Cradle ▶ New: 2.10.6 UTF-8 Convert ▶ New: 4.2.1 String Substitution |

- ▶ Modified: **1.1.6 Add-on Security Level** – descriptions updated
- ▶ New: **1.10.1 Decode No Wait Sending**
- ▶ Modified: **2.1.14 Special Keyboard Feature** – descriptions updated
- ▶ Modified: **2.4.5 Character Transmit Mode** – “By Character” as the default
- ▶ Removed: **2.4.17 Control Character Output for Windows**
- ▶ Modified: **3.7 Code 128** – security level: ultra high for some models added
- ▶ Modified: **2.1.1 Keyboard Type** (Keyboard Wedge) – tables updated
- ▶ Modified: **2.4.1 Keyboard Type** (Bluetooth HID) – table updated
- ▶ Modified: **5.2.1 Applicable Conditions** – range of Min./Max. Length revised

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| 1.91 | Mar. 23, 2017 | <ul style="list-style-type: none"> ▶ Modified: descriptions relating to 'CD-ROM' removed ▶ Modified: 1500P/1504A/1504B/1560P/1564A models added ▶ Modified: 1.2.4 Auto Power Off... - 1562 added ▶ New: 1.2.5 Auto Power On ▶ New: 1.7.1 Detection & Detection Level ▶ Modified: 2.1.13 Special Keyboard Feature - 1500 /1500P /1504A /1504B /1560 /1560P /1564A added ▶ Modified: 2.1.14 Cable Auto-Detection (Keyboard Wedge) - 1500P added ▶ Modified: 2.2.10 Cable Auto-Detection (RS-232) - 1500P added ▶ Modified: 2.4.6 Special Keyboard Feature - 1564A added ▶ Modified: 2.4.13 Role - 1560/1560P added ▶ New: 2.4.16 Fast Keypad for iPhone/iPad ▶ Modified: 2.5 BT SPP Slave Mode - Hardware Flow Control added ▶ Modified: 2.5.3 Device Name - 1560/1560P/1564/1564A added ▶ Modified: 2.6 BT SPP Master Mode - Hardware Flow Control, Auto-Reconnection added ▶ Modified: 2.9.1 Cable Auto-Detection (Direct USB HID) - 1500P added ▶ Modified: 2.9.5 Special Keyboard Feature - 1500P /1504A /1504B /1564A added ▶ Modified: 2.10.1 Cable Auto-Detection (Direct USB VCOM) - 1500P added ▶ Modified: 2.11 Direct USB VCOM_CDC - 1500P added ▶ Modified: 3.5.1 - Asterisk taken as data option (Code 39) added ▶ Modified: 3.7.1 - Security Level (Code 39) added ▶ Modified: 3.9.1/3.9.2 - Addon Mode (EAN-13) added ▶ Modified: 3.14.1 - Transmit Start/Stop checkbox (Italian Pharmacode) removed ▶ Modified: 3.16.1 - Security Level (GS1 DataBar) added ▶ Modified: 3.22 - picture updated ▶ New: 4.4.2 Identity Code (1663 Only) ▶ Modified: 4.9 - 1504B/1560P added for AIM Code ID |
| 1.83 | Feb. 03, 2015 | <ul style="list-style-type: none"> ▶ Modified: Tools Menu - 'Read memory data' function added (for 1560/1562/1564/1660/1661/1662/1663/1664) ▶ Modified: 1.1.7 - replace the 'Redundancy' label with 'Multicode Redundancy' |
| 1.81 | Sep. 16, 2014 | <ul style="list-style-type: none"> ▶ Modified: 1.1 - Multicode mode added in the scanning mode table ▶ New: 1.1.7 Multicode Mode (For 1504M/1564M/1664(M)/1664H (M) Models) |

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| 1.77 | Jun. 30, 2014 | <ul style="list-style-type: none"> ▶ Modified: Tools Menu – ‘Download user-defined keyboard table’ function added (for 1560/1562) ▶ Modified: 1.18 – Illumination Brightness spin box for 1564 ▶ Modified: 2.4.13 – BT HID Role drop-down menu for 1564 ▶ Modified: 2.4.14 – BT HID Device Name text field for 1564 ▶ Modified: 2.4.15 – BT HID Auto-Reconnection for 1564 ▶ Modified: 3.22 – GS1 Formatting dialog for 1564 ▶ Modified: 4.4 – Serial Number Stamp for 1564 |
| 1.76 | Jun 11, 2014 | <ul style="list-style-type: none"> ▶ New: 1.13 – Hardware Reset Function checkbox ▶ New: 1.14 – [Delete] Key Function checkbox ▶ Modified: 1.18 – Illumination Brightness spin box (1664 only) ▶ New: 2.4.13 – BT HID Role drop-down menu ▶ New: 2.4.14 – BT HID Device Name text field ▶ New: 2.4.15 – BT HID Auto-Reconnection drop-down menu ▶ New: 2.5.3 – BT HID Device Name text field ▶ New: 2.9.6 – Polling Interval (1662/1663/1664) spin box ▶ Modified: 3.8 – GTIN-13 checkbox added for EAN-8 ▶ Modified: 3.11.1 – concatenation drop-down menu added for 1500 / 1502 / 1660 / 1661 / 1663 ▶ New: 3.22 – GS1 Formatting dialog (1500 / 1502 / 1504 / 1560 / 1562 / 1660 / 1661 / 1662 / 1663 / 1664 scanners support) ▶ New: 4.4 – Serial Number Stamp (1662/1663/1664 only) ▶ Modified: 4.8 – examples added for Remove Special Character |
| 1.74 | Apr. 01. 2014 | <ul style="list-style-type: none"> ▶ Modified: Introduction – Tools Menu: 2D Image Processing screenshot updated (‘Keep Image Capture’ checkbox added) ▶ Modified: Appendix II – 2D Image Processing: 2D Image Processing screenshots updated |
| 1.71 | Aug. 28, 2013 | <ul style="list-style-type: none"> ▶ Modified: 3.11 ISBT 128 – descriptions for ISBT 128 not supporting 1504SE (3.11.2 For 2D Scanners) |
| 1.70 | Jul. 30, 2013 | <ul style="list-style-type: none"> ▶ Modified: Introduction – Setup Barcodes – show sequence number in front of setup barcode ▶ Added: 1.16 2D Decode Setting (1504/1564/1664) – Mobile Phone/Display Mode ▶ Added: 2.4.12 Transmit Speed ▶ Modified: 4.8 AIM Code ID – 1504/1564 models added |
| 1.61 | Apr. 2, 2013 | <ul style="list-style-type: none"> ▶ Modified: Introduction – Add instructions for PrintBarcode (2D setup barcode) in the Setup Barcodes section ▶ Modified: 2.4 Bluetooth HID – screenshot updated (2.4.11 SSP Mode description added) |
| 1.60 | Dec. 21, 2012 | <ul style="list-style-type: none"> ▶ Modified: 1663 model added for related settings ▶ New: 4.8 AIM Code ID |
| 1.50 | Oct. 12, 2012 | <ul style="list-style-type: none"> ▶ Modified: 2.4.1 Keyboard Type — add #75 User defined Table, #78 PCAT (Switzerland), #79 PCAT (Danish) |
| 1.40 | Apr. 3, 2012 | <ul style="list-style-type: none"> ▶ New: Add 1662 ▶ New: Add Set Up Drivers License for 1504/1564/1664 |

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| 1.31 | Mar. 7, 2012 | <ul style="list-style-type: none"> ▶ New: 1.13: Low light Enhancement for 1504/1564/1704 Presentation Mode ▶ New: 2.1.13: Special Keyboard Feature for 1504/1564 Keyboard Wedge ▶ New: 2.4.6: Special Keyboard Feature for 1564 Bluetooth HID ▶ Modified: 2.7: Special Keyboard Feature added for 1564 USB HID via 3656 ▶ New: 2.9.5: Special Keyboard Feature for 1504 Direct USB HID |
| 1.30 | Dec. 08, 2011 | <ul style="list-style-type: none"> ▶ New model 1664 included. Changes applied throughout the manual. Critical updates are: <ul style="list-style-type: none"> ○ "RTC Time Setup" newly inserted under Tools Menu ○ 1.2 "Power Management" updated ○ 1.2.2 "Power-Saving" updated ○ 1.12 "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 | <ul style="list-style-type: none"> ▶ 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: <ul style="list-style-type: none"> ○ 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 | <ul style="list-style-type: none"> ▶ 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 | <ul style="list-style-type: none"> ▶ Modified: 1.1 Scan Mode — add support of Presentation Mode for 1704 |
| 1.18 | Mar. 02, 2011 | <ul style="list-style-type: none"> ▶ New: add 1504, 1564 ▶ Modified: Introduction — 1560/1562/1660 supports Settings Type in Tools Menu Read or Download scanner settings |

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| 1.17 | Jan. 10, 2011 | <ul style="list-style-type: none"> ▶ 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 | <ul style="list-style-type: none"> ▶ 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 | <ul style="list-style-type: none"> ▶ 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 | <ul style="list-style-type: none"> ▶ 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 |

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| 1.13 | Feb. 04, 2010 | <ul style="list-style-type: none"> ▶ 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 | <ul style="list-style-type: none"> ▶ 1560/1562 supports keyboard wedge and RS-232 via 3656 |
| 1.11 | Jul. 07, 2009 | <ul style="list-style-type: none"> ▶ 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 | <p>Support 1560/1562</p> <ul style="list-style-type: none"> ▶ 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 | <ul style="list-style-type: none"> ▶ Modified: 3.10 GS1-128 (EAN-128) ▶ Modified: 3.16 GS1 DataBar (RSS Family) |
| 1.04 | Feb. 11, 2009 | <ul style="list-style-type: none"> ▶ Modified: 1.1 Scan Modes — add Alternate Mode ▶ Modified: 1.1.4 Re-read Delay — add Alternate Mode |
| 1.03 | Dec. 19, 2008 | <ul style="list-style-type: none"> ▶ 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 | <ul style="list-style-type: none"> ▶ 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 |

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| | | <ul style="list-style-type: none"> ▶ 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 | <ul style="list-style-type: none"> ▶ 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 |

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Introduction

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

- ▶ 1D Scanners: 1000A
 1500P
 1502
 1560P
 1562
 1660/1661/1662/1663
 2500/2560

- ▶ 2D Scanners: 1504A/1504P(B)
 1564A
 1664
 1704
 2504/2504MR
 2564/2564MR

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!

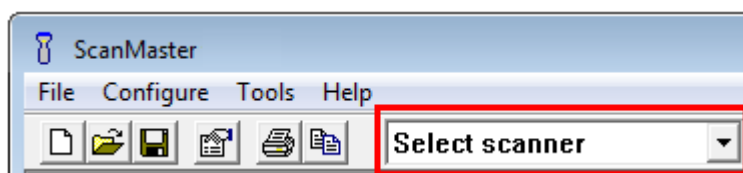
System Requirements

Run the ScanMaster, one of the Windows operating systems is required:

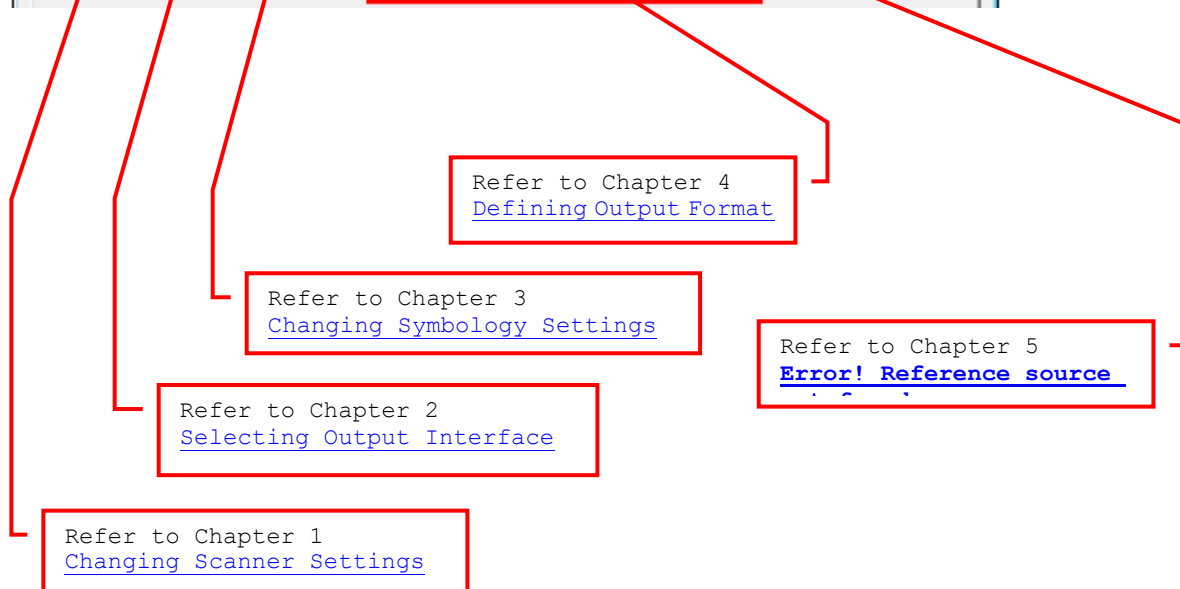
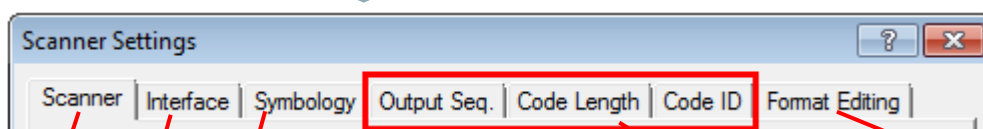
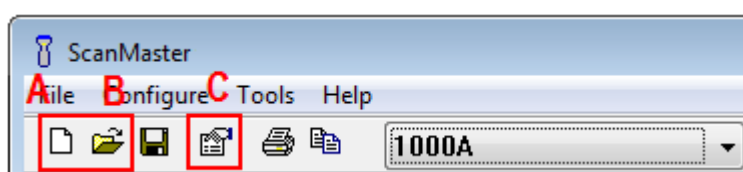
- ▶ Windows 2000
- ▶ Windows XP
- ▶ Windows Vista
- ▶ Windows 7

Using ScanMaster

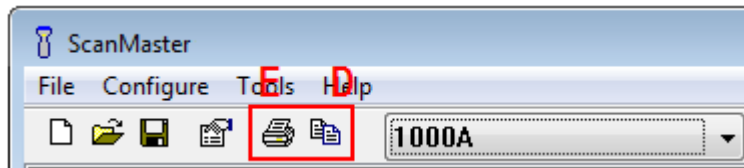
The **ScanMaster** is installed with a folder that contains two programs, **ScanMaster.exe** and **PrintBarcode.exe**. The main function is to configure the scanners. First, run **ScanMaster.exe** on your computer. Select the model you are going to configure.



Scanner settings for the selected model can be configured by (A) starting a new configuration, (B) opening an existing configuration file, or (C) reading the configuration from a scanner.



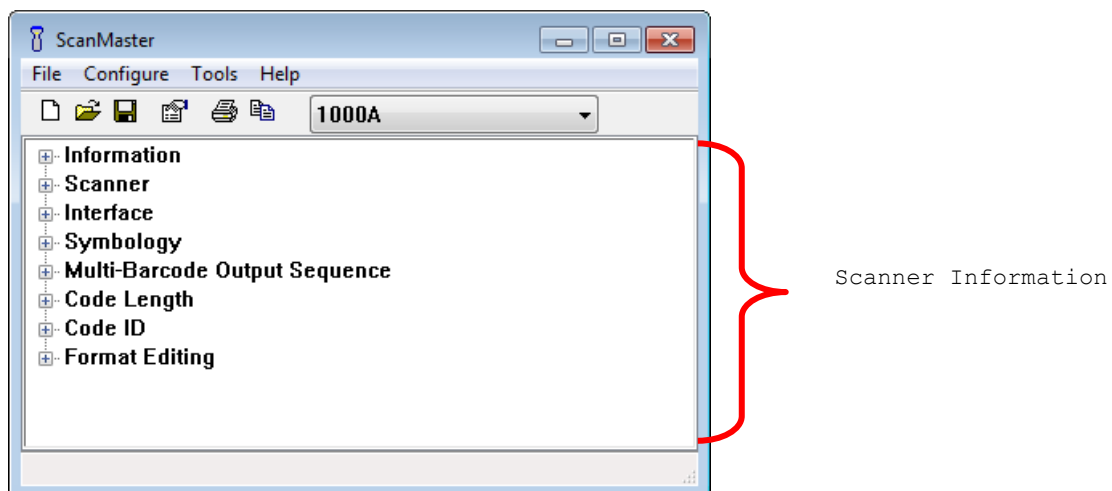
Then click (D) to send the configuration to other scanners directly, or click (E) to generate a file named *Barcode.prn* to keep a copy of the setup barcodes for the configuration.






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 menu of [Select Scanner] on the toolbar, select the scanner you are configuring. If you are using ScanMaster for the first time, click to expand the items on the **ScanMaster** window to see the [Scanner Information](#) by category so that the default settings of the scanner can be viewed.



- 3) Click  or  on the toolbar to create a new configuration file.


Click  on the toolbar to open an existing configuration.

Click **Tools | Read Scanner Settings** to read the configurations from the source scanner connected 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 beforehand.

- 4) Select the **Configure | Configure scanner...** on the menu bar to configure the scanner. The [Scanner Settings] dialog box consists of several tabs as the picture shown below. Each configuration tab is corresponding to the scanner information in the **ScanMaster** window.



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 with selected letter case 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 to the scanner; otherwise you need to click the  on the toolbar to print out the setup barcodes to apply the settings to the scanner by reading setup barcodes.

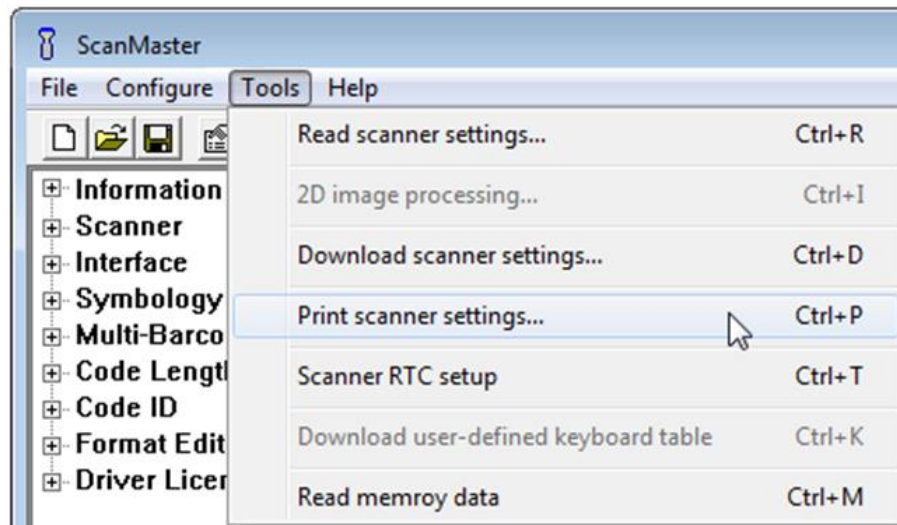
Note: The program PrintBarcode.exe must be in the same folder with ScanMaster.

- 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.

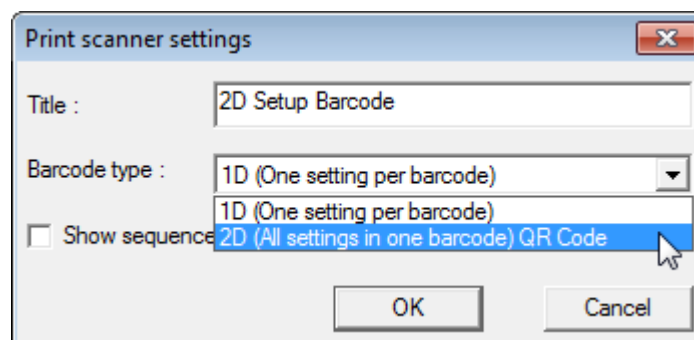
Note: If the scanner is set to the Wand Emulation mode, you need to connect it to a portable data terminal or a decoder that is expecting input from a wand scanner.

Setup Barcodes

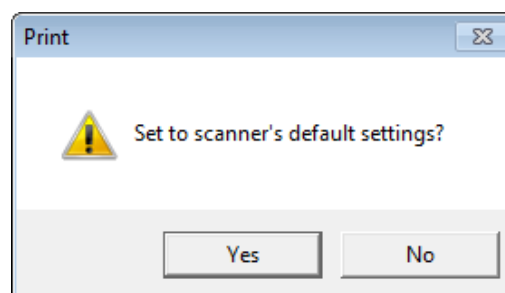
Select **Tools | Print scanner settings...** on the menu bar to launch the **PrintBarcode** applet.



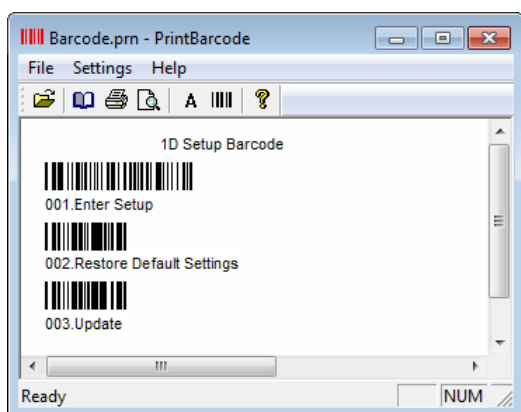
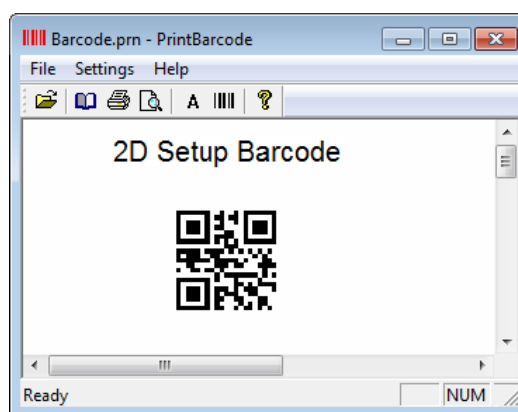
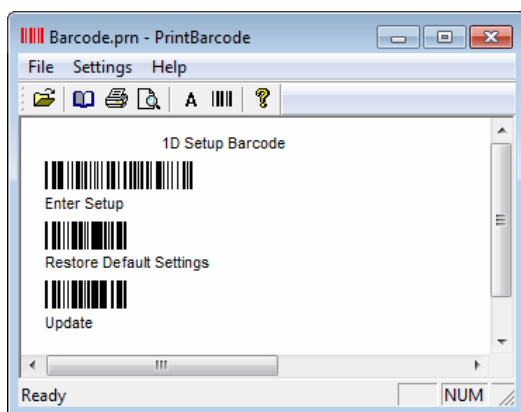
Then a dialog box shows up requiring users to specify title and barcode type for the barcode settings (2D barcode type option is available only for 1504/1564/1664). To clarify the steps of setup barcodes, you can check the "Show sequence number in front of setup barcode" check box to label each setup barcode with a number.




After you have specified title and barcode type, click the OK button. Then a warning message window appears requiring confirmation from you. Click the Yes button to continue.



Read the 1D setup barcodes below one by one to restore the scanner default settings. Or just read the single 2D barcode to do the same job (the right-hand picture below).



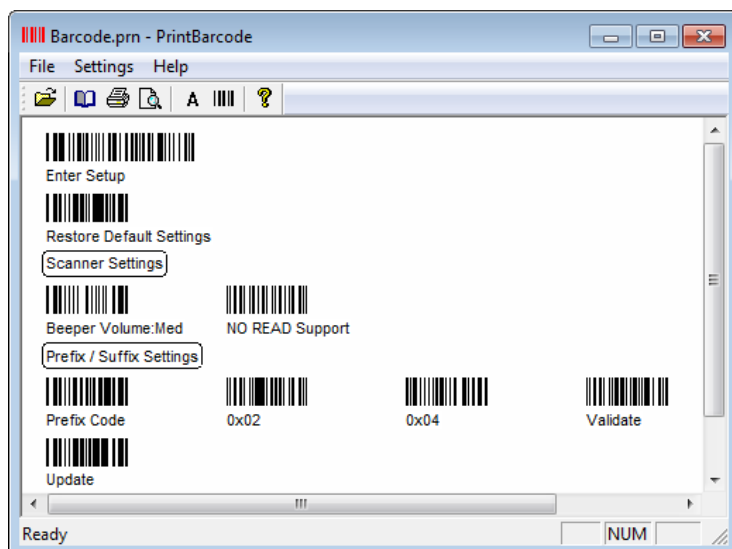
| Setup Barcodes | Indication |
|---------------------------------|---|
| <i>Enter Setup</i> | Scan this barcode to enter the configuration mode – <ul style="list-style-type: none"> ▶ the scanner responds with six beeps (high-low tone repeats three times), and ▶ the LED indicator becomes flashing red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

Depending on your requirements, click the Barcode Properties icon  on the tool bar to adjust gap settings and resolution for 1D/2D barcodes.



| Barcode Properties | Purpose |
|---|--|
| 1D | |
| <i>Gap1 (mm)</i> | Define the gap in millimeters ranging from 1mm to 10 mm between the barcode and its label. |
| <i>Gap2 (mm)</i> | Define the gap in millimeters ranging from 2mm to 20 mm between the label of a barcode and the next barcode. |
| <i>Resolution</i> | Define the bar width for the barcode. Five options are available: 0.15, 0.25, 0.33, 0.40, and 0.45 mm. |
| 2D | |
| <i>Resolution</i> | Define the 2D barcode resolution. Small, Medium, and Large options are available. |
| <i>Print settings information</i> | Tick the check box to show settings information (label) of the barcode. |
| <i>Print Restore Default Settings barcode</i> | Tick the check box to show the "Restore Default Settings" barcode. |

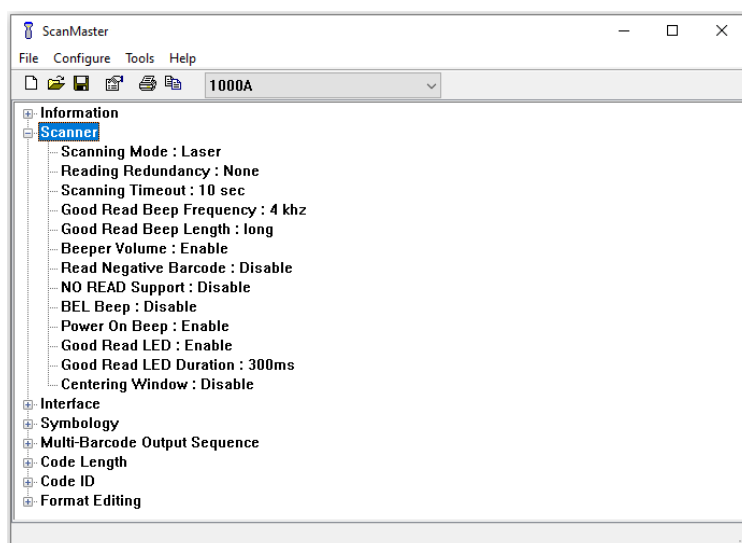
If you want to load new settings, scan associated barcodes. Take the screenshot below for example.



- ▶ 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" barcode to confirm the changes. 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, click to expand the scanner information by category to check the default settings of the scanner. If you open an existing configuration file or change the current settings, the information displayed here will be updated accordingly.

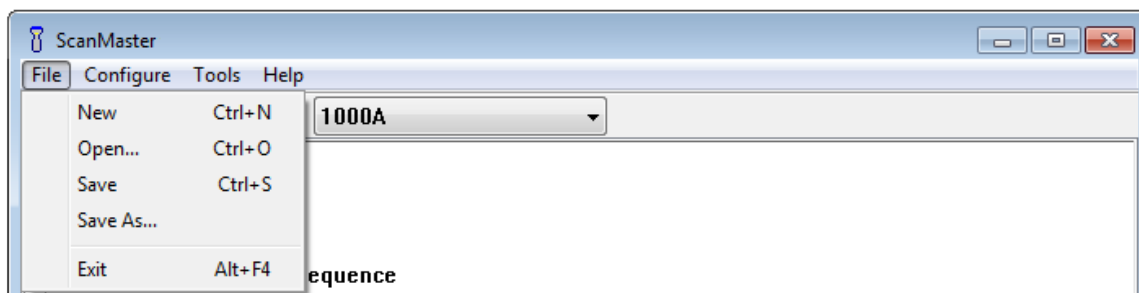


Menu Bar

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

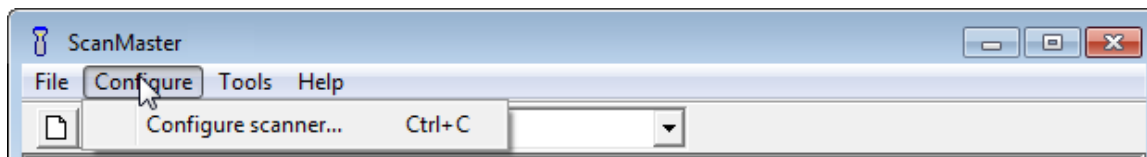
The File Menu contains the commands that produce the actions as tabulated below:



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

Configure Menu

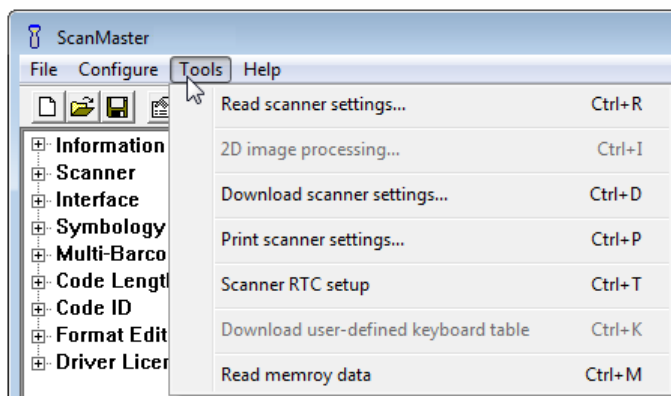
The Configure Menu displays the **Configure scanner...** submenu to allow you to open [Scanner Settings] dialog box for accessing the settings as tabulated below:

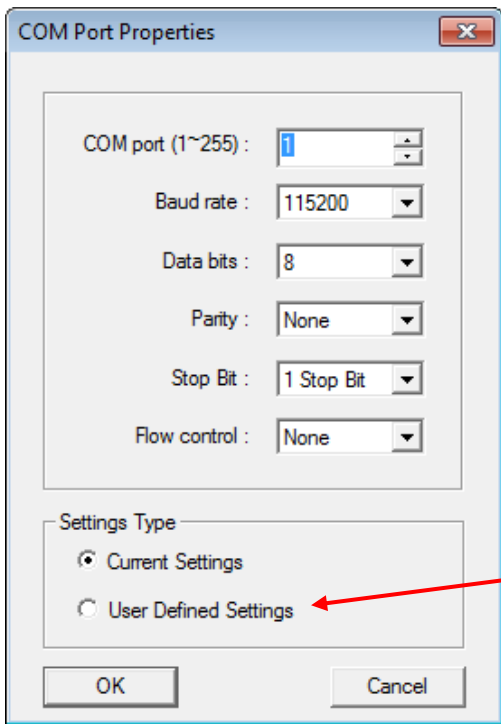


| Command | Action |
|--------------------------|--|
| <i>Configure Scanner</i> | <p>Configures the current settings for the target scanner.</p> <p>Refer to the following sections –</p> <ul style="list-style-type: none">▶ Chapter 1 – Changing Scanner Settings▶ Chapter 2 – Selecting Output Interface▶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

Tools Menu

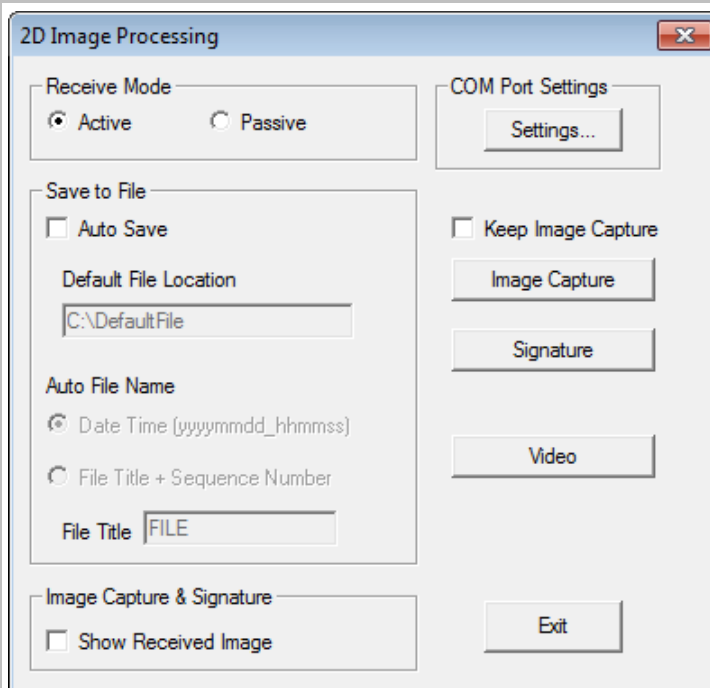
The Tools Menu contains the submenus that launch the actions as tabulated below:



| Command | Action |
|------------------------------|--|
| <i>Read scanner settings</i> | <p>Display [COM Port Properties] dialog box that enables users to fetch the settings applied on the scanner at the moment. For 1504A, 1560P, 1562, 1564A, 1660, 1661, 1662, 1663, 1664 and 25xx series, it supports to fetch user's defined settings (= "User Defaults").</p>  <p>For 1504A/1560P/1562/1564A 1660/1661/1662/1663/1664 25xx Series</p> <p>► A dialog box pops up for configuring the COM port properties on your PC. For Bluetooth SPP or USB Virtual COM, specify the COM port for connection and ignore the other settings.</p> |

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

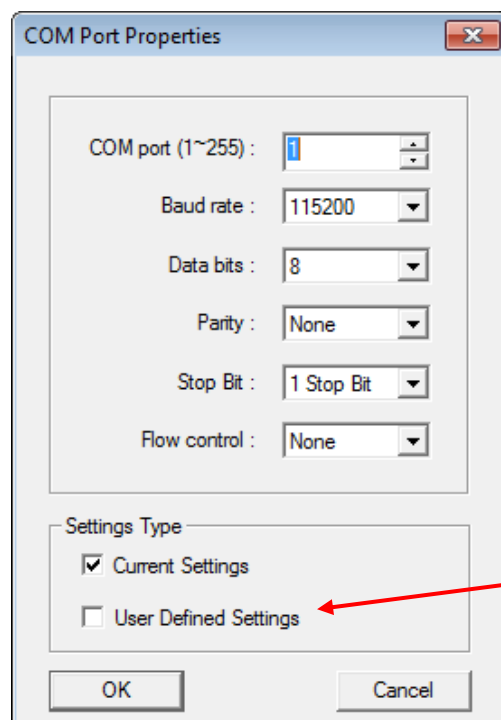
2D image
processing



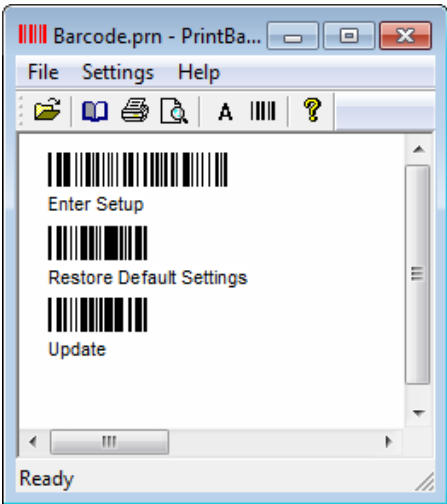
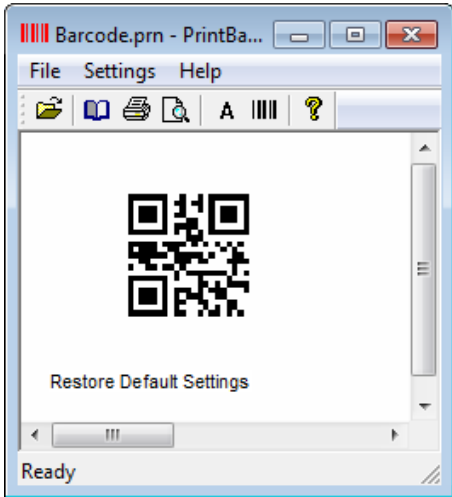
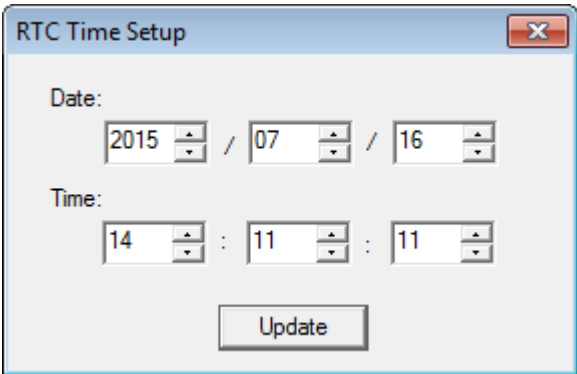
Refer to [1.20 2D Decode Settings \(1704\)](#) and [Appendix II — 2D Image Processing \(1704 Only\)](#).

Download
scanner settings

Display 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 1504A, 1560P, 1562, 1564A, 1660, 1661, 1662, 1663, 1664 and 25xx series, it supports you to send the settings to the scanner as **"User Defaults"**.

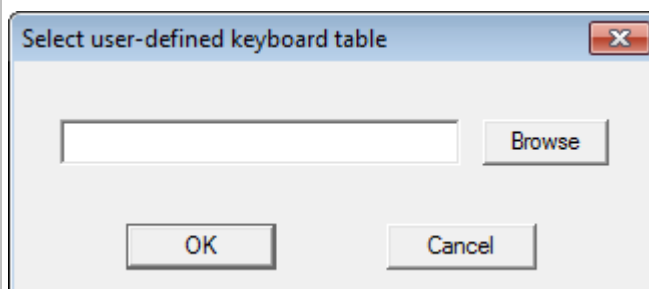


For 1504A/1560P/1562/1564A
1660/1661/1662/1663/1664
25xx Series

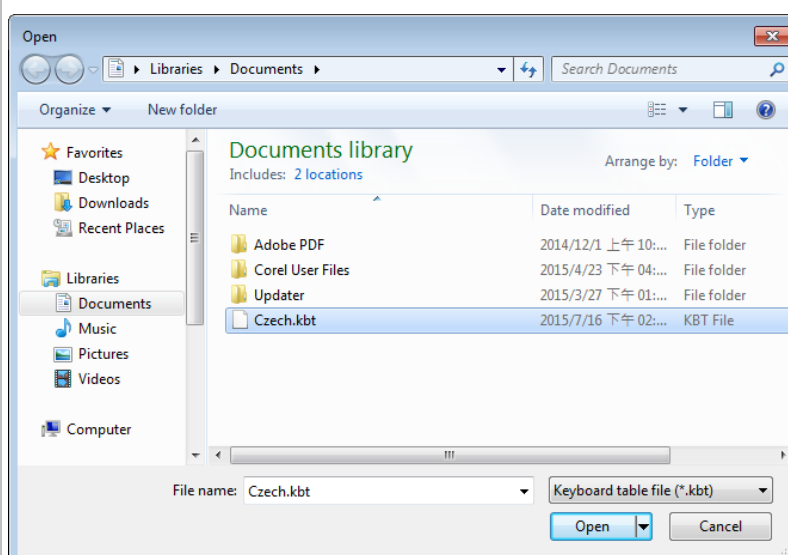
| | | |
|----------------|---------|--|
| | | <p>► The [COM Port Properties] dialog box provides the access to set the COM port properties on your PC. For Bluetooth SPP or USB Virtual COM, specify COM port for connection and ignore the other settings.</p> |
| Print settings | scanner | <p>Run PrintBarcode.exe to print out the Setup Barcodes based on the settings (automatically saved in the Barcode.prn file) made in the ScanMaster.</p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;">  <p>1D Setup Barcodes</p> </div> <div style="text-align: center;">  <p>2D Setup Barcode</p> </div> </div> <p>Scanner configuration can also be changed by scanning the setup barcodes if the scanner is not connected to the host computer via RS-232 or Virtual COM (Bluetooth SPP or USB VCOM).</p> <p>► The setup barcodes are categorized into groups of related settings.</p> |
| Scanner setup | RTC | <p>Set clock / calendar time for the 1662/1664 scanner to affix date/time stamps to scanned barcodes. See also 5.3 Date & Time Stamp (1662/1663/1664).</p>  |

Download user-defined keyboard table

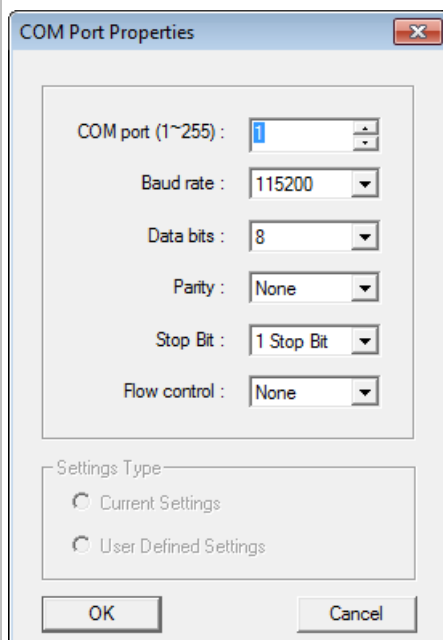
For 1560P/1562/2560, users can download a user-defined keyboard table to the scanner which is connected to your PC via RS-232 or Virtual COM (Bluetooth SPP or USB VCOM) interface. When the dialog shows up, specify the file path in the text field.



Or click the Browse button to locate the user-defined keyboard table file (with '.kbt' extension).



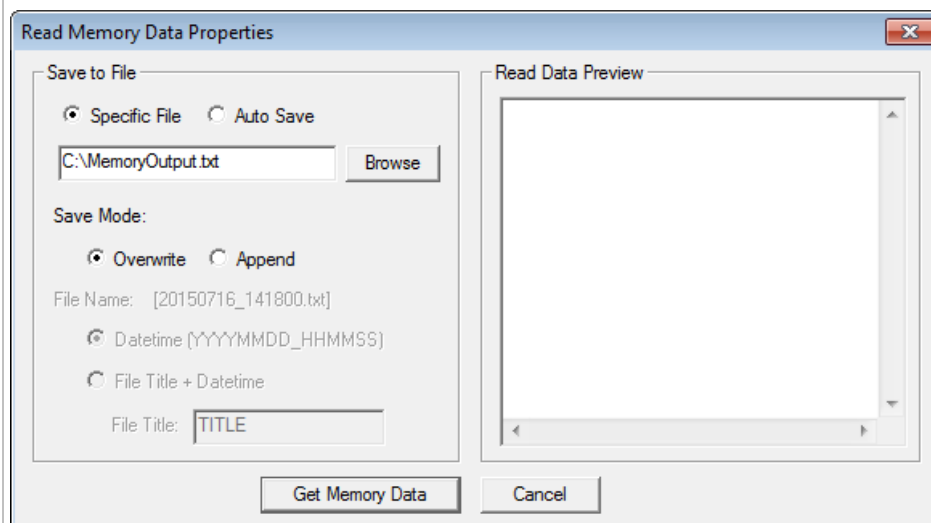
And then a dialog shows up for you to specify the COM port properties.



Read
data

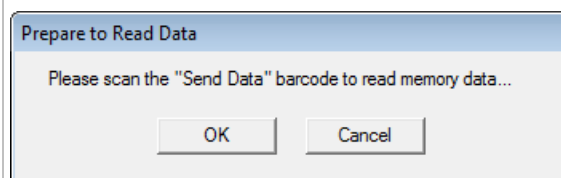
memory

For cordless scanners, users can save the memory data to a text file.

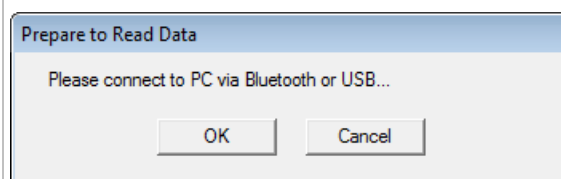


- ▶ **Specific File:** The file name can be specified manually by users. Click Browse to specify the file location.
- ▶ **Auto Save:** With this radio button selected, the file name is generated automatically. Click Browse to specify the file location.
- ▶ **Overwrite:** Contents of the specified file will be overwritten.
- ▶ **Append:** Memory data will be appended to the specified file.
- ▶ **File Name:** It's a display-only label indicating the file name to be generated.
- ▶ **Datetime (YYYYMMDD_HHMMSS):** The file name will be generated with date/time info in this format.
- ▶ **File Title + Datetime:** Specify file title in addition to the data/time info for a file name.
- ▶ **Get Memory Data:** Click this button to save memory data to the file. Meanwhile, the saved data will be displayed in the Read Data Preview area.

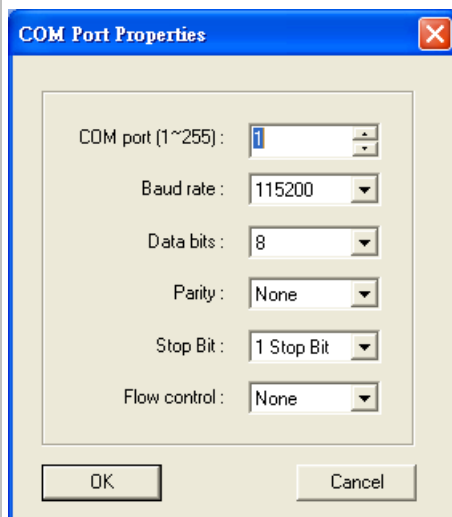
For 1560P/1562/1564A/1660/2560/2564/2564MR, a dialog shows up indicating that users have to scan the "Send Data" barcode prior to getting memory data.



For 1661/1662/1663/1664, a dialog shows up indicating that users connect the device to PC via Bluetooth or USB prior to getting memory data.

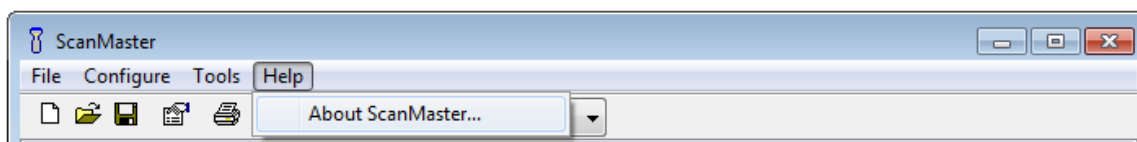


After clicking the OK button, the COM Port Properties dialog shows up for you to specify the COM port properties



Help Menu

The Help Menu contains the **About ScanMaster** item.










| Command | Action |
|-------------------------|---|
| <i>About ScanMaster</i> | Provide the information about the version, copyright and developer of the ScanMaster. |

Toolbar

The toolbar enables the quick access to most of the commands as below:



The icons from left to right are specified with following commands:

| | |
|---|---|
|  | ▶ New |
|  | ▶ Open |
|  | ▶ Save |
|  | ▶ Configure |
|  | ▶ Print |
|  | ▶ Download Settings |
|  | ▶ Select a specific scanner model to proceed with the configuration |

Chapter 1

Changing Scanner Settings

The [Scanner Settings] dialog box features a number of tabbed property pages. Every property page includes functions for the selected scanner.

Note: Please note that whether a particular function is supported depends on the model of product being selected. For example, "Low Battery Alarm" is provided only for models equipped with battery.

Scanner Settings

Scanner Interface Symbology Output Seq. Code Length Code ID Format Editing Driver License Parsing

Scanning Mode : Laser ☐ Read Negative Barcode ☐ Auto Sense Normal

Reading Redundancy : None ☐ NO READ Support Detection by : Barcode

Re-read Delay : 0.4 sec ☐ CCD Always Active Detection Level : 0

Continuous Mode Decode Delay : None ☒ Good Read LED 4 x 10 ms ☐ Auto Power on

Aiming Timeout : 1 sec ☐ Memory Mode

Scanning Timeout : 10 sec Data Delay : None

Auto Power Off : 10 min ☐ Centering Window

Good Read Beep Freq : 4 KHz Left Half : Left 50%

Good Read Beep Len : Shortest Right Half : Right 50%

Beeper Volume : Max ☒ Transmit Buffer

Low Battery Alarm : Enable ☒ Decode No Wait Sending

Power Saving Duration : 2 min ☐ BEL Beep

Pager Beep Duration : 5 sec ☒ [Delete] Key Function

☒ Hardware Reset Function

Multicode... More... 2D Decode... Reset

OK Cancel

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1.1 Scanning Mode

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

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

| Scan Mode | Start to Scan | | | | | Stop Scanning | | | |
|---------------------|---------------|--------------------|--------------|---------------------|-----------------|-----------------|--------------------|--------------------|---------|
| | Always | Press trigger once | Hold trigger | Press trigger twice | Release trigger | Release trigger | Press trigger once | Barcode being read | Timeout |
| Continuous mode | ✓ | | | | | | | | |
| Testing mode | ✓ | | | | | | | | |
| Laser mode | | | ✓ | | | ✓ | | ✓ | ✓ |
| Auto Off mode | | ✓ | | | | | | ✓ | ✓ |
| Auto Power Off mode | | ✓ | | | | | | | ✓ |
| Alternate mode | | ✓ | | | | | ✓ | | |
| Repeat mode | ✓ | | | | | | | | |
| Momentary mode | | | ✓ | | | ✓ | | | |
| Aiming mode | | | | ✓ | | | | ✓ | ✓ |
| Multi-Barcode mode | | | ✓ | | | ✓ | | | |
| Multicode mode | | | ✓ | | | ✓ | | ✓ | ✓ |
| Release Mode | | | | | ✓ | | | ✓ | ✓ |

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

Continuous Mode

The scanner is always scanning.

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

Note: Refer to [1.1.2 Continuous Mode Decode Delay](#) and [1.1.4 Re-read Delay](#).

Testing Mode

The scanner is always scanning.

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

Laser Mode

The scanning starts when the trigger is held down.

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

Note: Refer to [1.1.1 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 [1.1.1 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 [1.1.4 Re-read Delay](#) and [1.1.1 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

Refer to [1.1.3 Aiming Timeout](#) and [1.17 Aim Submode](#).

Multi-Barcode Mode

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

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

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.

Multicode Mode

The scanning starts as long as the trigger is pressed down, capable of decoding multiple barcodes based on the arranged multicode settings. The multicode settings define the barcode(s) that the scanner can expect to find in an image. And the scanner reports a successful decode only if it decodes all barcodes indicated by the multicode settings, otherwise the decode fails. Barcodes are transmitted in the order defined in the multicode settings.

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

Momentary Mode

The scanner will be scanning as long as the trigger is hold down. The scanning won't stop until you release the trigger.

Release Mode

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

1.1.1 Scanning Timeout

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

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

1.1.5 Reading 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 Add-on Security Level

This option is available on the Symbology property tab. You may like to enforce redundant reading on UPC/EAN barcodes with addons only.

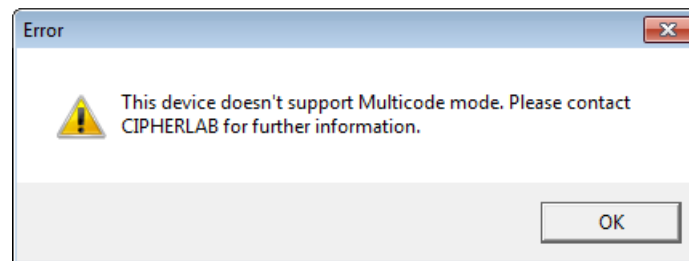
The scanner is capable of decoding a mix of UPC/EAN barcodes with or without addons. You can change the number of times to decode a UPC/EAN barcode before transmission. The more redundancy selected, the higher the reading security is, and thus, the slower the reading speed becomes. It will have to compromise between reading security and decoding speed.

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

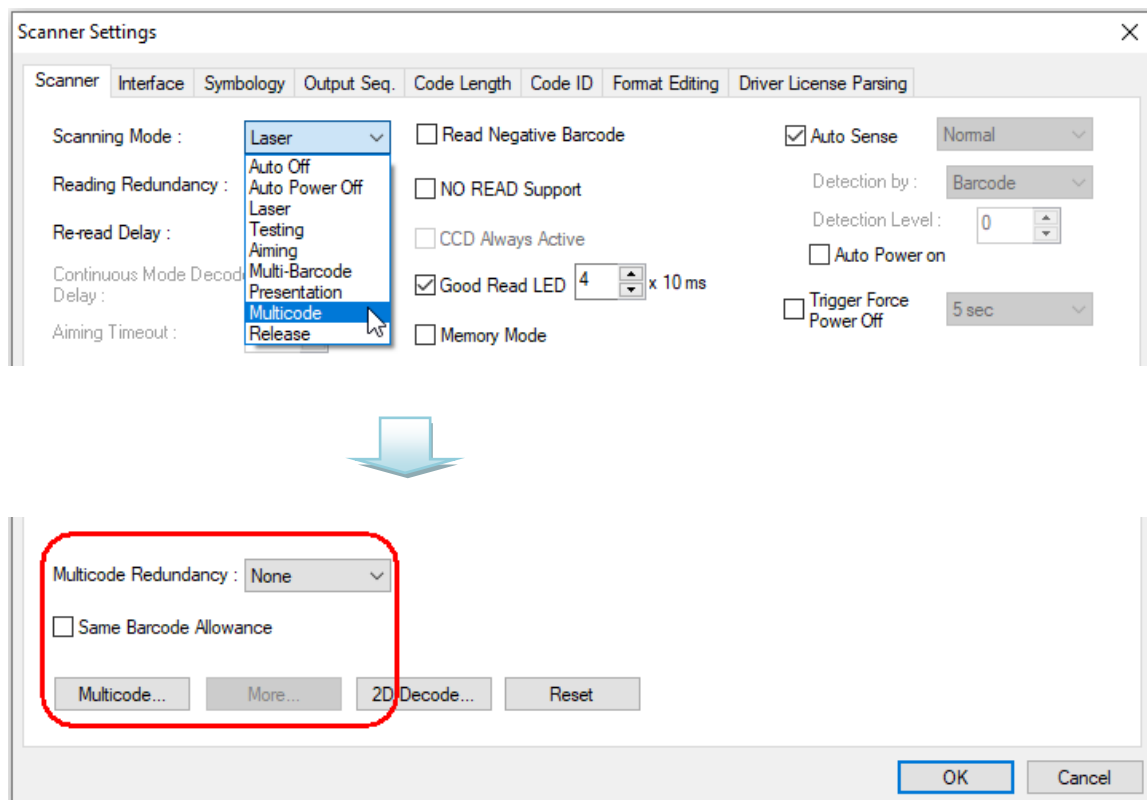
1.1.7 Multicode Mode

As mentioned above, the Multicode mode is capable of decoding multiple barcodes based on arranged settings. Please follow instructions below to complete the settings.

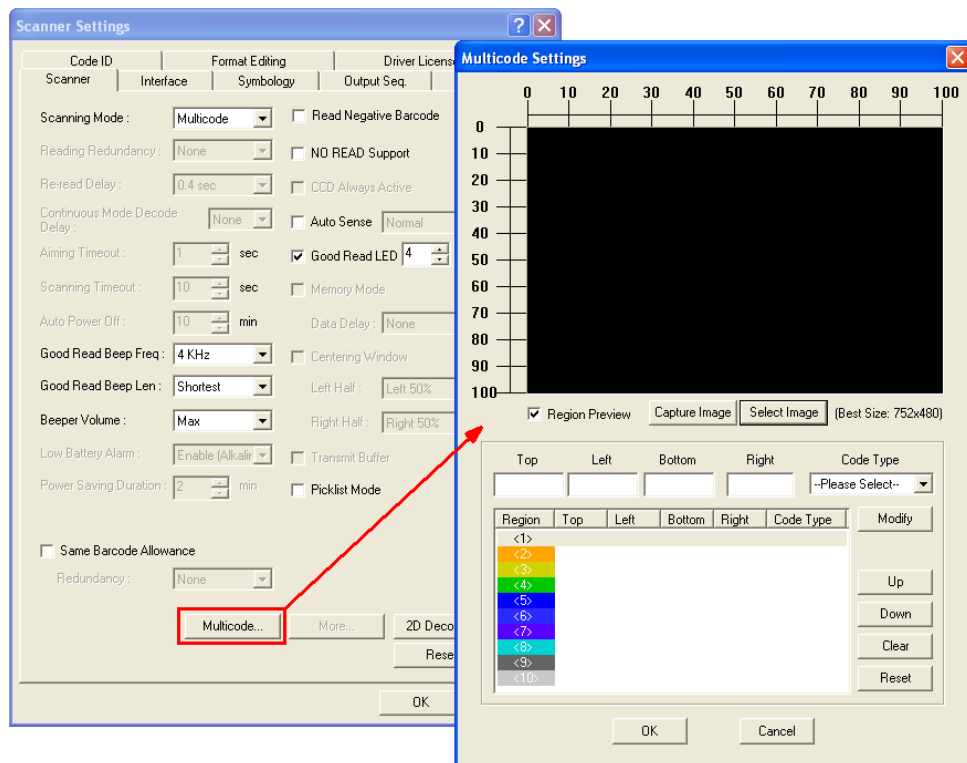
Note that Multicode Mode only supports some 2D models of product. If you see the message below while downloading scanner settings to the device, you are probably using the models not supported.



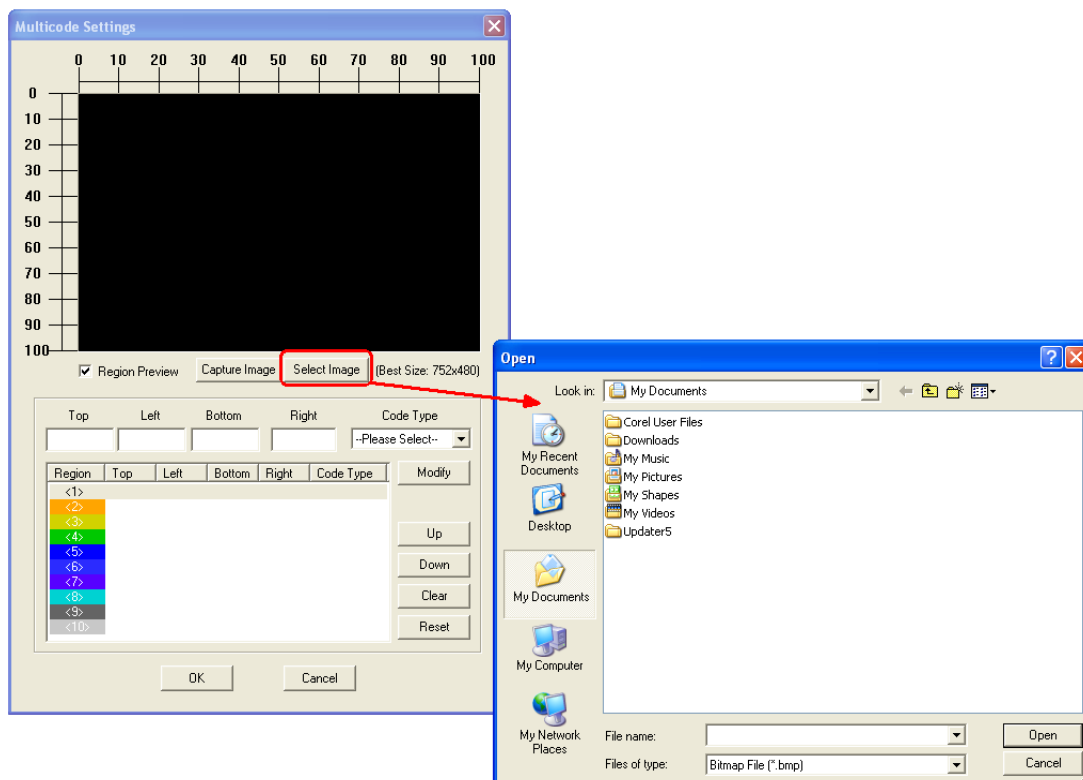
- 1) When "Multicode" is selected from the Scanning Mode drop-down menu, a checkbox labelled "**Same Barcode Allowance**" appears in the Scanner tab and the dimmed "**Multicode**" button becomes available.



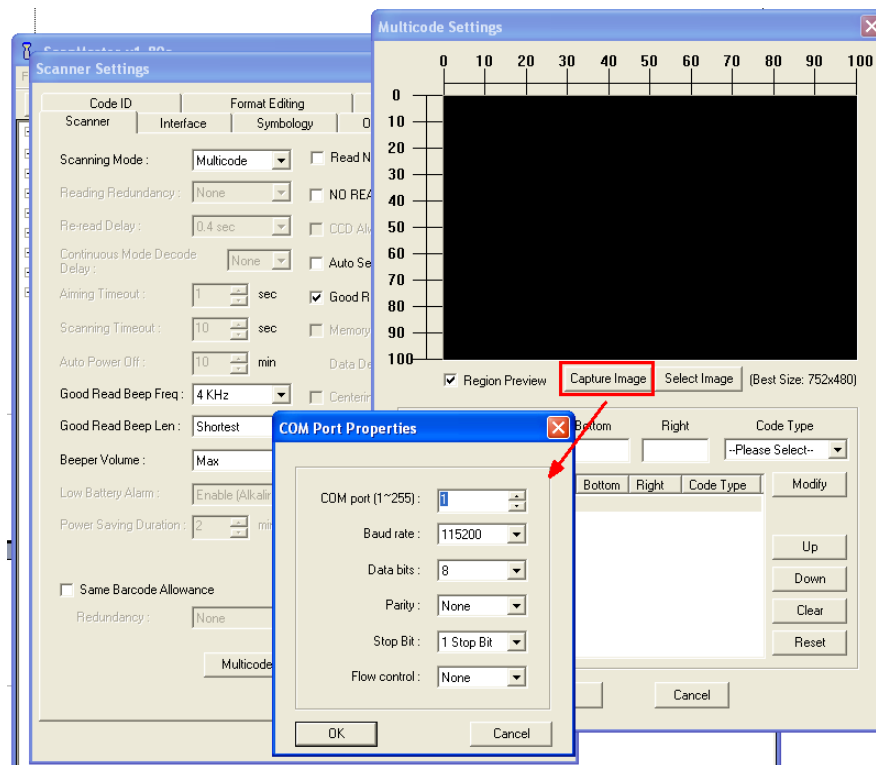
- 2) Click the Multicode button to bring up the Multicode Settings dialog.



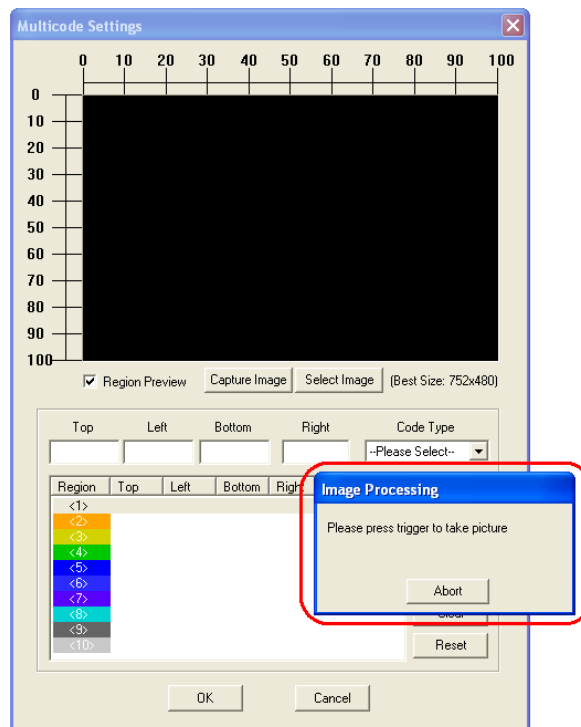
- 3) If you have barcode image files, click the Select Image button to locate the files.



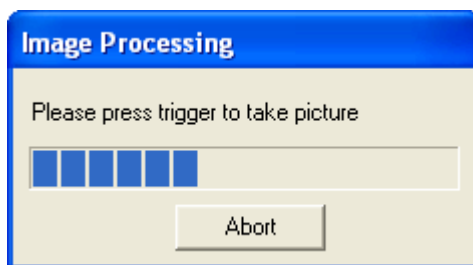
- 4) Or you can click the Capture Image button to have the scanner taking a picture of barcodes. After clicking the button, the COM Port Properties dialog shows up. Specify the COM port number being used by the scanner and then click the OK button.



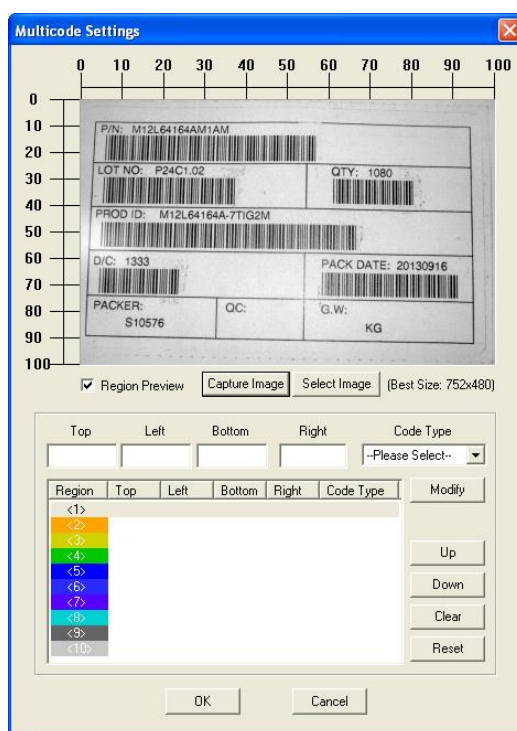
After specifying the COM port, the scanner emits the cross light and the Image Processing dialog shows up. Make sure the field of cross light emitted by the scanner covers all barcodes you want to decode. And then press the trigger to start capturing.



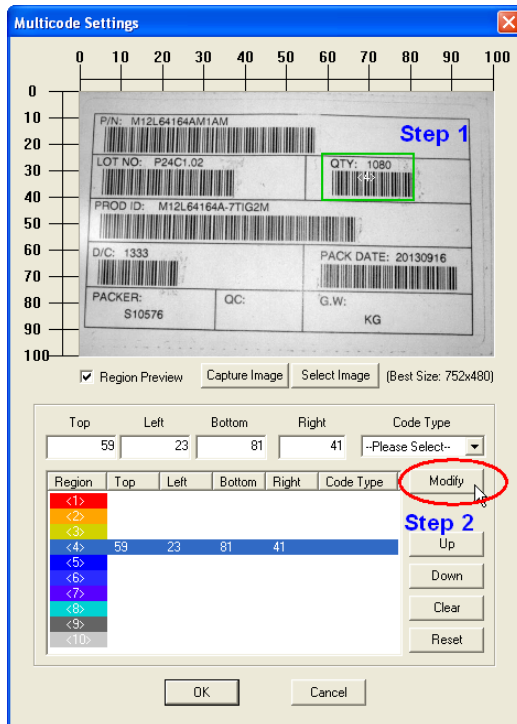
After pressing the trigger, you will see the progress bar running, as the picture shown below.



- 5) When the capturing process completes, the scanner responds with two ascending beeps and the captured image is displayed.

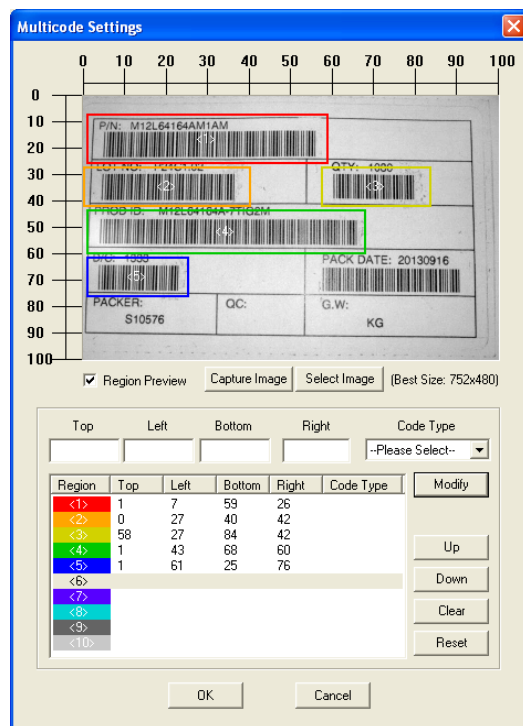


- 6) Within the preview area, click and drag the mouse to draw a rectangle (if the Region Preview checkbox is unchecked, rectangles won't be displayed) properly enclosing a single barcode. For example, the screenshot below illustrates how that a rectangle is created.

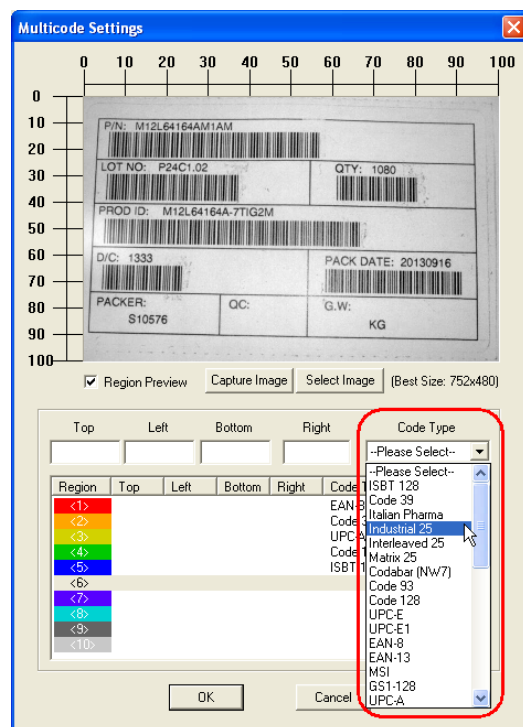


- ▶ First, enclose a particular barcode (Step 1).
- ▶ Second, make sure you have enclosed the barcode properly and then click the Modify button to finish creating the rectangle (Step 2). Then you will see that the coordinates have been added; changing the coordinates in Top/Left/Bottom/Right fields can adjust the position of a particular rectangle.

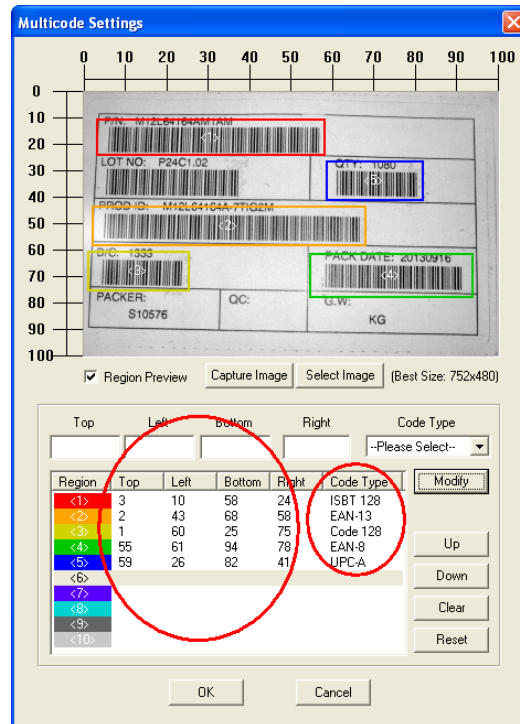
- 7) You can repeat the drawing process to make up to 10 rectangles. The rectangles are created in different colors and labeled with a number. Note that the regions are listed in order of colors.
- ▶ **Up/Down:** With a created region selected in the list, click the Up/Down button to change its order; the color of the rectangle will change when it is moved up/down.
 - ▶ **Clear:** With a particular region selected, click the Clear button to remove the rectangle.
 - ▶ **Reset:** Click the Reset button to remove rectangles altogether.



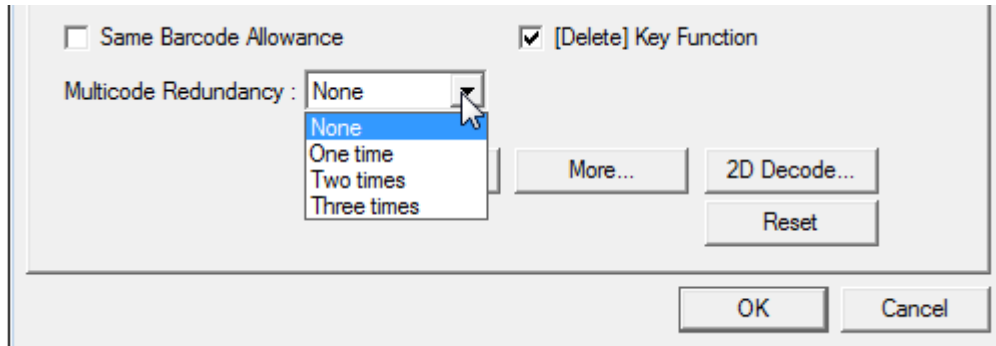
- 8) The method mentioned above is to decode barcodes by regions. Besides, you can also define up to 10 code types to decode all barcodes seen in the image. This means only those barcodes whose code types match what you have determined will be decoded. Please see the screenshot illustrated below.



- 9) Certainly, you can employ both region and code type methods to filter barcodes for your own purposes.



- 10) Check the Same Barcode Allowance checkbox to determine the level of reading security.



For example,

- ▶ If "None" is selected, one successful decoding will make the reading valid and induce the "READER Event".
- ▶ If "Three times" is selected, a total of four consecutive successful decodings of the same barcode will be done 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.

1.2 Power Management (for Wireless Scanners)

The Bluetooth-enabled scanners 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 Scanning Mode](#)).

Note there are a few eccentric cases:

- ▶ The "Power-Saving" is inoperative for the Bluetooth HID or SPP on all concerned models except for 1662/1663/1664.
- ▶ With 1661, 1662, 1663 and 1664 set to Direct USB for output, the "Power-Saving" and "Auto Power Off" only come 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) wait for a connection request from the host (Bluetooth SPP Slave Mode)
 - (b) try to connect to the host (Bluetooth HID or Bluetooth SPP Master Mode)
 - (c) try 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).

Press the scan trigger or the scan key 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).

Hold down the scan trigger or the [Power/Delete] key 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] 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.
 - ▶ 1662/1664 is an exception from the said behavior. The 1662/1664 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] key 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 scanning 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 scanning 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 scanning 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 to have the scanner automatically shut down in 10 minutes after power-on by default.

Note: For 1560P and 1564A, 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 Scanning Mode

"Auto Power Off Ignoring Scanning Mode" is provided for Continuous, Testing and Alternate modes only.

Select "Auto Power Off Ignoring Scanning Mode" and assign a time (1~254 min.; 0= disable) to force a scanner into 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 Auto Power On (1560P/1564A)

For your convenience, 1560P/1564A is designed to power on automatically in Auto-sense mode when you seat it in the stand connecting to the power socket. By default, this mechanism is disabled. You have to enable it by checking the check box.

1.2.6 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)".

1.2.7 Trigger Force Power Off

Select the Trigger Force Power Off checkbox to allow users to pull down the trigger for the specified time to turn off the scanner immediately. And then click the drop-down menu to specify the time interval by selecting 5, 10, 15, or 20 seconds.

1.3 Status Indicator

Refer to [1.19 More Settings \(1662/1663/1664/1704\)](#) for Good Read Vibrator.

1.3.1 Beeper Volume

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

1.3.2 Good Read Beep

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

1.3.3 Good Read LED

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

1.4 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.

1.5 "NO READ Support" (Send "NR" to Host)

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

1.6 CCD Always Active (1560P/2560 Only)

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

Note: For the 1500P scanner, the CCD sensor is set to "Always Active" and isn't subject to change.

1.7 Auto Sense

This mode is only applicable when you seat the 1500P/1504x/1560P/1564A scanner 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 1500P/1560P.

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



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

1.7.1 Detection & Detection Level

You can determine the occasion for decoding destination barcodes. Click the drop-down menu to select between "Barcode" and "Motion".

- ▶ **Barcode:** When an object is judged a barcode, the scanner decodes the destination barcode.
- ▶ **Motion:** When an object is detected moving, the scanner decodes the destination barcode.

Besides, users can further specify the auto-sense detection level ranging from 0 to 7 (default value is set to 4; greater number means higher detection sensitivity) when the scanner is seated in the stand and set in the "Motion" mode.

1.8 Memory Mode

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

The scanner keeps flash memory for memory mode operation.

- | | |
|--|--------|
| ▶ 1560P/1562/1661: | 512 KB |
| ▶ 1564A/1662/1663/1664/2560/2564/2564MR: | 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 time between each data record while transmitting data back to the server.

1.8.2 Send Data & Clear Memory

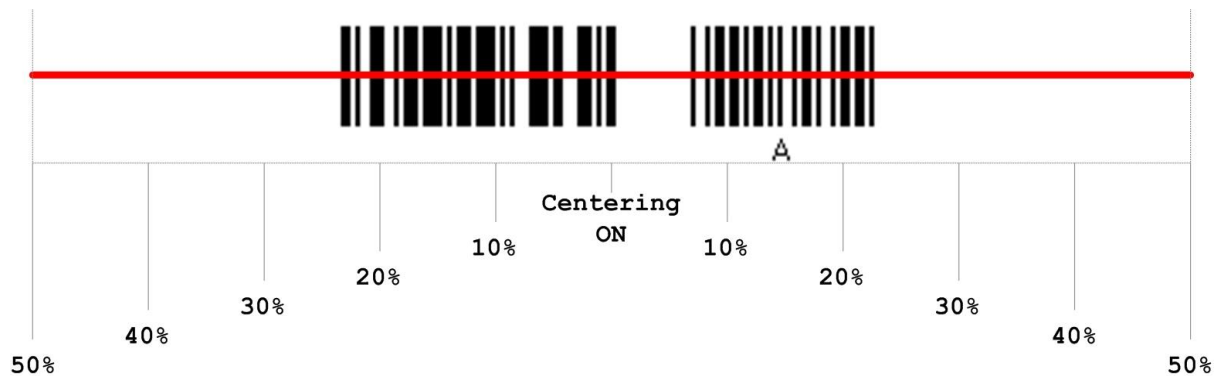
When flash memory is running out, the scanner will respond with two short beeps (high-low tone) as a warning. You are advised to send data to the server immediately by having the scanner read the setup barcodes. Refer to a separate manual.

- ▶ For 1560P/1562/1564A/1660/2560/2564/2564MR, the scanner will resume the previous WPAN connection with the host computer temporarily.
- ▶ For 1661, 1662, 1663 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 [2.10.2 Secondary Interface \(1661/1662/1663/1664\)](#).

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 Centering Window

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

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.

The scanner can ignore the transmission status and keep on reading barcodes until the buffer (varies depending on models) is full.

| Transmit Buffer | Models of Product |
|-----------------|----------------------------------|
| 1KB | 1660/1661 |
| 2KB | 1663 |
| 4KB | 1560P/1562 |
| 10KB | 1564A/1662/1664/2560/2564/2564MR |

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 into 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 into the coverage.

1.10.1 Decode No Wait Sending

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

1.11 Pager Beep (1662/1663/1664 Series)

This function helps track down the 1662/1663/1664 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 1662/1663/1664 scanner:

1.11.1 Windows-based Personal Computer

When the host is a Windows-based personal computer, the transmission interfaces supported are Bluetooth HID and Bluetooth SPP. Deviated from other 1-series Bluetooth-based models, the 1662/1663/1664 scanner is able to deliver Power-Saving service for Bluetooth HID and SPP.

However the Pager Beep only comes to the rescue when the 1662/1663/1664 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 1662/1663/1664 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 key or power key 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 1662/1663/1664 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 key or the power key is pressed.
- 2) It is the defined time for Power-Saving again. (The scanner returns to power-saving.)

1.11.2 Smart Handheld

Whether it is a smartphone or a portable tablet PC, as long as it is paired and stays connected with the lost 1662/1663/1664, 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 key or the power key 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.

1.12 Hardware Reset Function (1660/1661/1662/1663/1664)

By default, the 1660/1661/1662/1663/1664 scanners allow users to press the key combination to restore system defaults or reset Bluetooth connection. Remove the tick to disable the key combination.

1.13 [Delete] Key Function (1660/1661/1662/1663/1664)

By default, users can directly press the [Delete] key on the scanner to delete data. Remove the tick to disable the [Delete] key.

1.14 BEL Beep

With this function enabled, the scanner will produce a bell ring when receiving the '0x07' character which is sent via interfaces depicted in the table below.

| Scanner Type | Supported Interface |
|--------------|---|
| Tethered | RS232, VCOM, or VCOM CDC |
| Cordless | BT SPP Slave, BT SPP Master, RS232 via BT Cradle, VCOM via BT Cradle, or VCOM CDC via BT Cradle |

1.15 Power On Beep

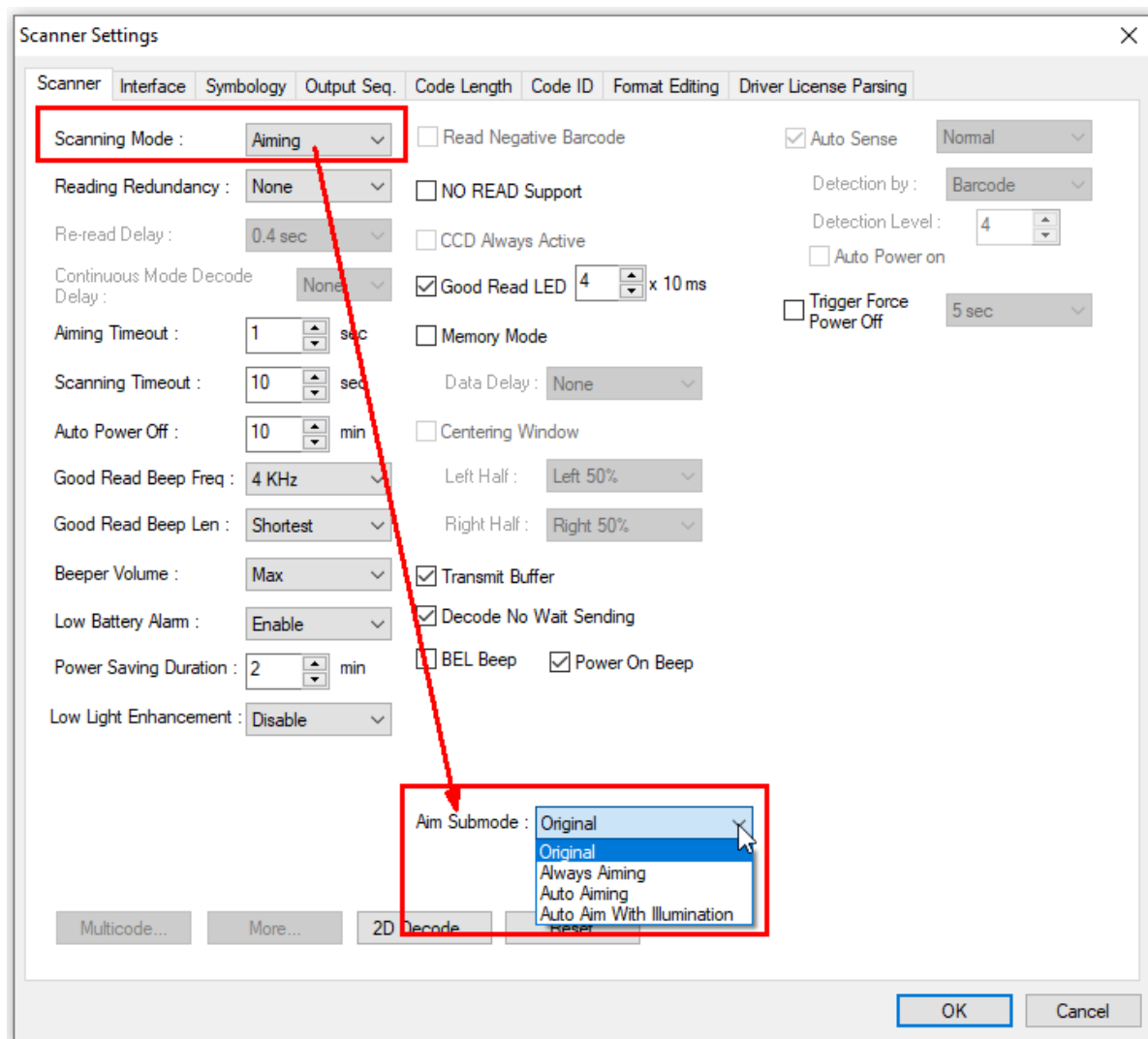
By default, the scanner beeps when you power it on. You can disable the power-on beep by unselecting the checkbox.

1.16 1D Mobile Display Mode

By default, this check box is not checked. With this check box checked to enable display mode, there is a big improvement in reading barcodes displayed on mobile phones and electronic displays.

1.17 Aim Submode

When the [1.1 Scanning Mode](#) drop-down menu is set to Aiming, the Aim Submode checkbox is then available which you can further specify the aiming submode. The options may vary depending on the model you selected.



1.17.1 Original Mode

By default, the scanner will aim at a barcode once the trigger is pressed, and start scanning when the trigger is pressed again within one second. Refer to [1.1.3 Aiming Timeout](#).

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

1.17.2 Always Aiming

The scanner is aiming at all times. You are supposed to press the trigger to decode the barcode. Refer to [1.1.3 Aiming Timeout](#).

1.17.3 Auto Aiming

The scanner will be expecting barcodes. Whenever a barcode is brought within range, the scanner starts aiming at the barcode. Then you are supposed to press the trigger to decode the barcode. Refer to [1.1.3 Aiming Timeout](#).

1.17.4 Auto Aiming with Illumination

The scanner will be expecting barcodes. Whenever a barcode is brought within range, the scanner starts aiming at the barcode with visible illumination. Then you are supposed to press the trigger to decode the barcode. Refer to [1.1.3 Aiming Timeout](#).

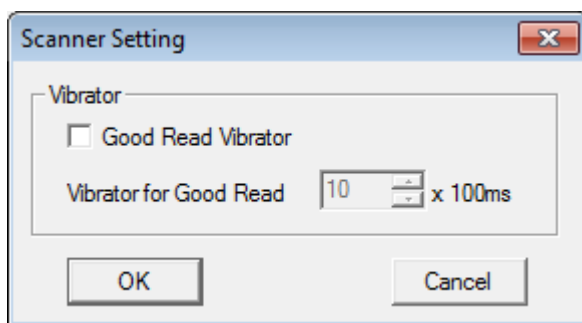
1.18 Low Light Enhancement (2D Models except 16xx Series)

For 1704, this option is available only when Presentation Mode is selected for **Scanning Mode**.

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

1.19 More Settings (1662/1663/1664/1704)

For 1662, 1663, 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.



1.20 2D Decode Settings (1704)

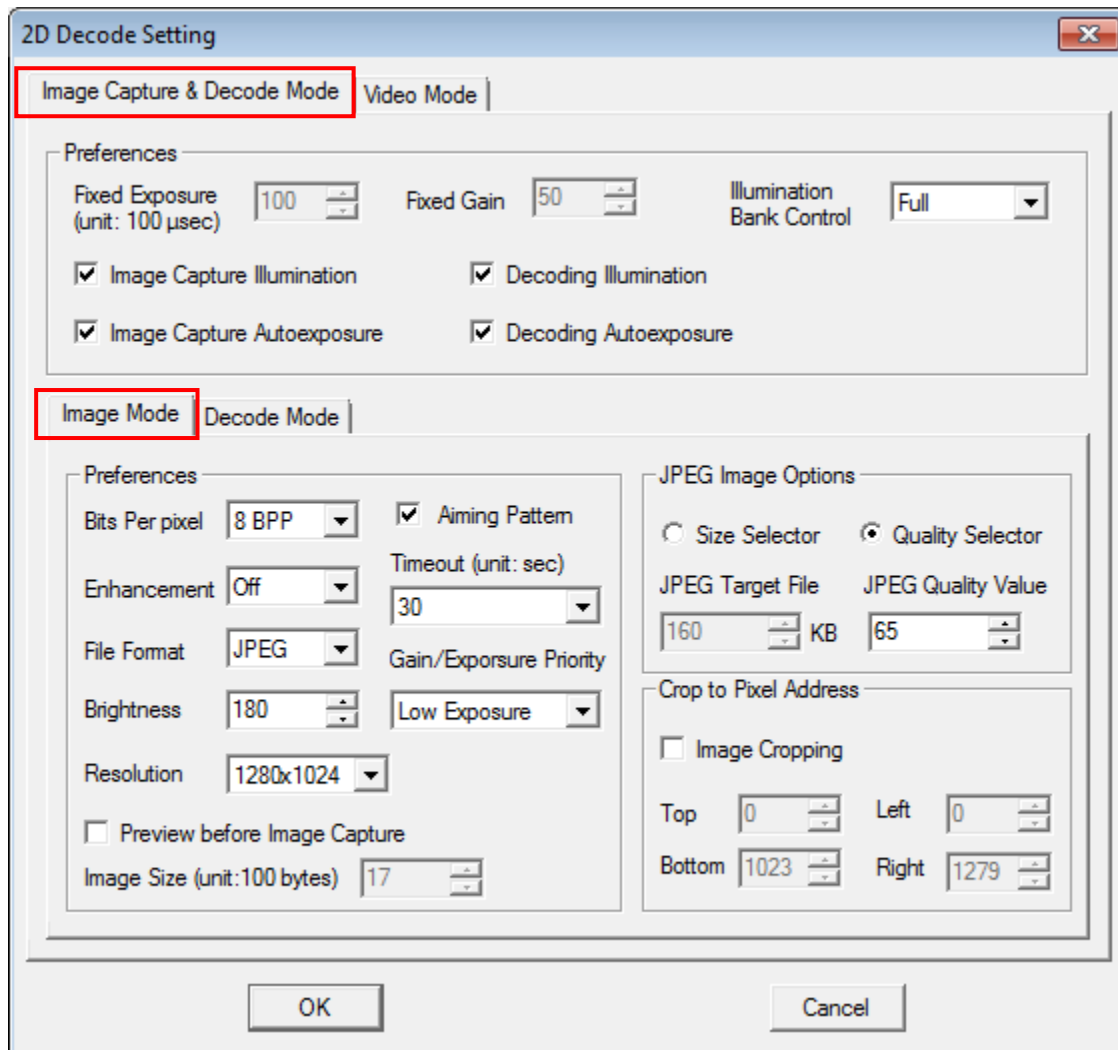
1704 supports different scanning modes and signature capture in Decode Mode. Two more operation modes are supported, which are Image Mode and Video Mode. Image capture occurs in all modes of operation, and it requires software applications, such as *ScanMaster*, to capture and download images to PC for 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 II — 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.

1.20.1 Image Mode



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

Fixed Exposure

When autoexposure is disabled, specify the exposure time (2~5000), in unit of 100 μ s. 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.

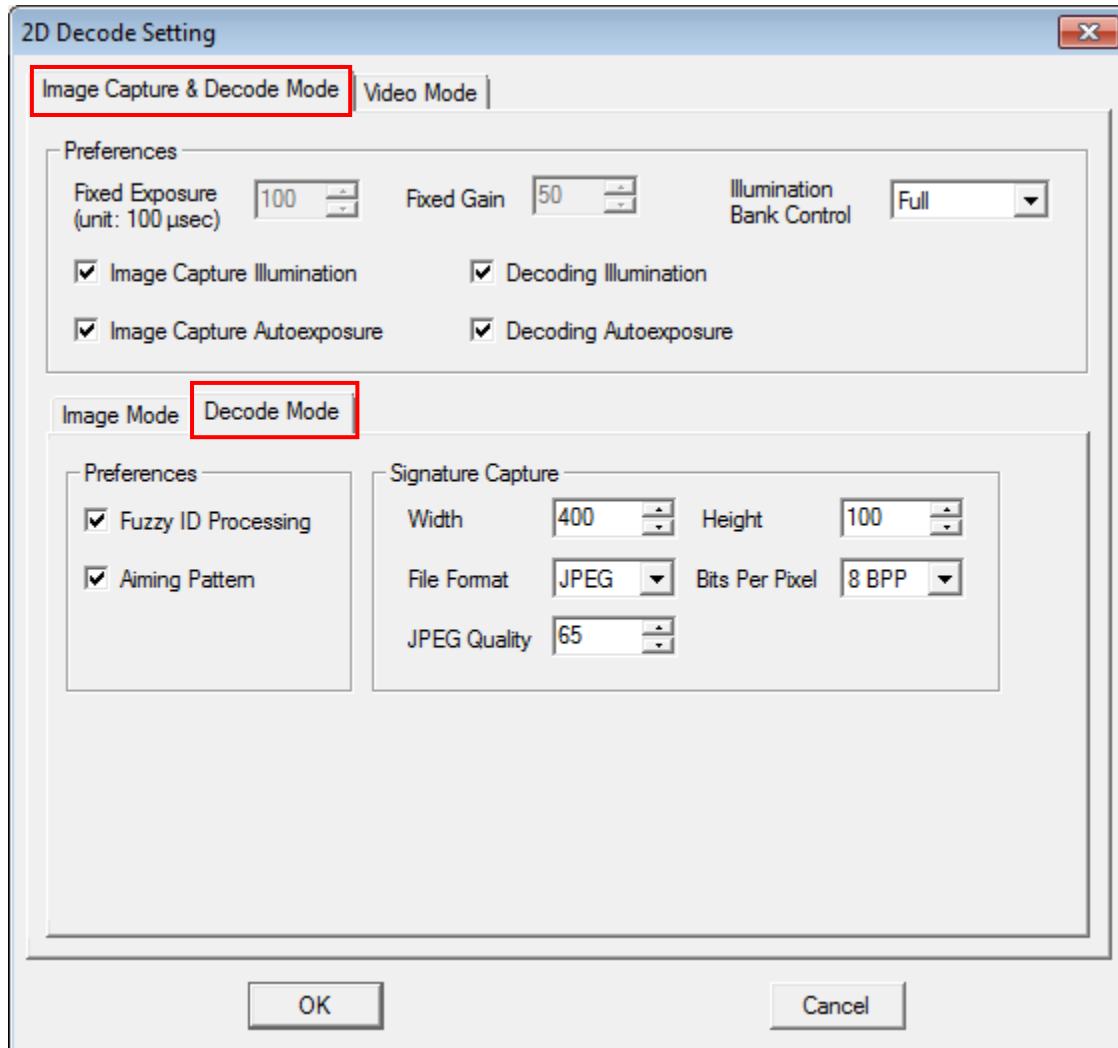
- ▶ For image cropping on 1704, set the pixel addresses from (0,0) to (1279, 1023) to crop to. Columns are numbered from 0 to 1279, rows from 0 to 1023. Specify four values for Top, Left, Bottom, and Right, where Top and Bottom correspond to row pixel addresses, and Left and Right correspond to column 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.

1.20.2 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 Scanning 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.

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 of 1704 (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.

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.

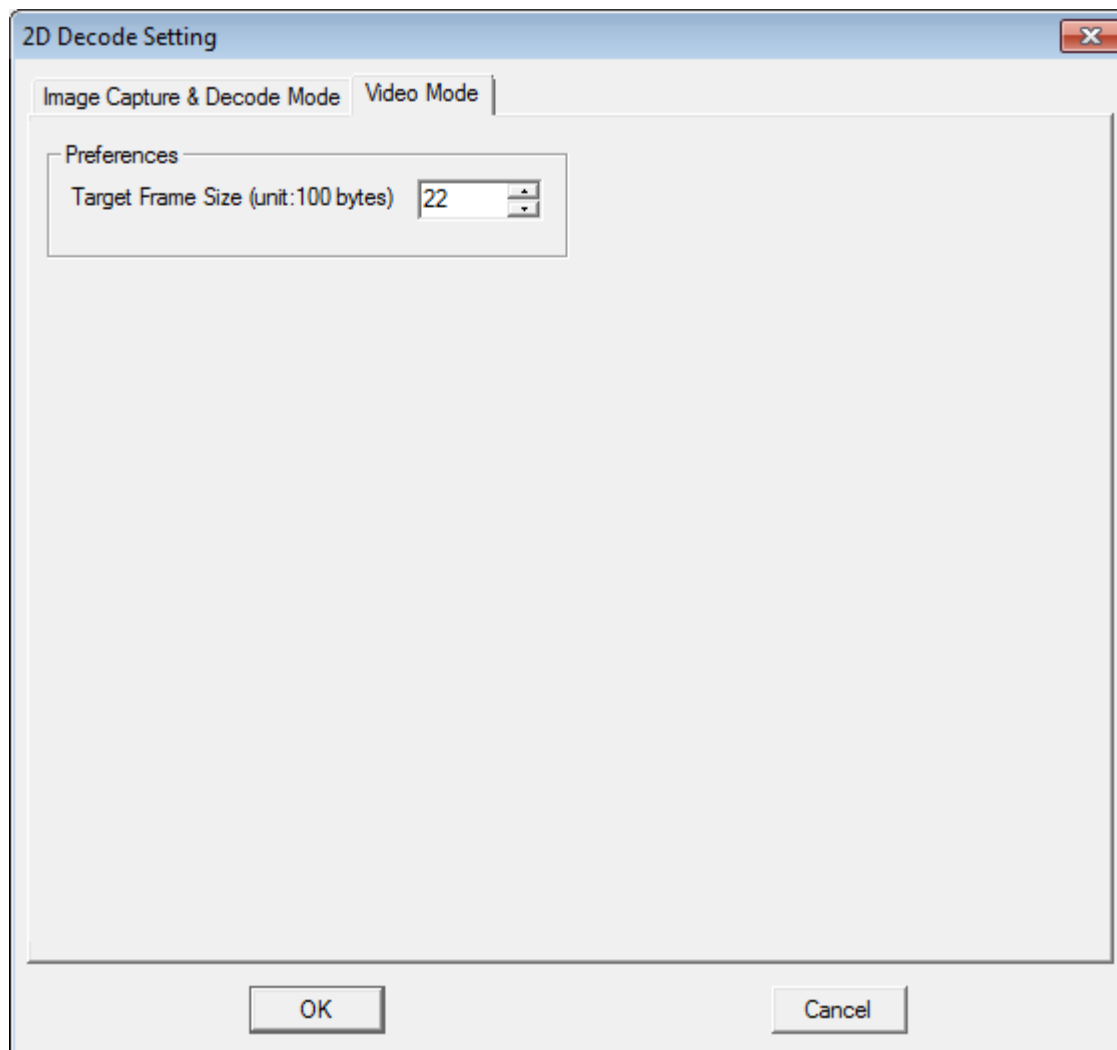
Signature Capture

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.
-

1.20.3 Video Mode

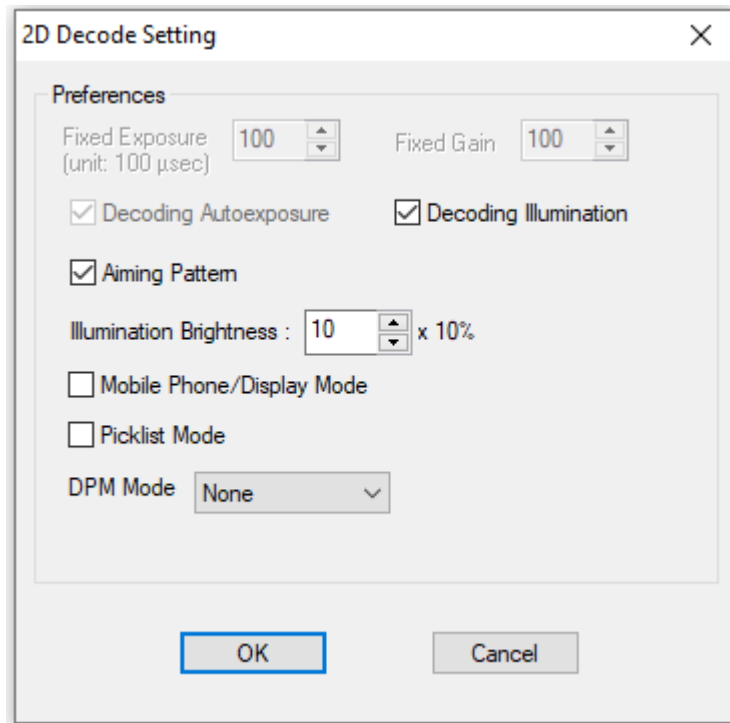


Target Video Frame Size

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.

1.21 2D Decode Settings (Scanners except 1704)

Click the 2D Decode... button to bring up the 2D Decode Setting dialog box. Setting items may differ depending on the model.



Fixed Exposure

"Decoding Autoexposure" is selected (enabled) and isn't available. Thus, the Fixed Exposure time isn't subject to change.

Fixed Gain

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

Decoding Autoexposure

Decide whether to manually specify the gain and exposure time.

"Decoding Autoexposure" is selected (enabled) and isn't subject to change.

Decoding Illumination

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

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

Aiming Pattern

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

Illumination Brightness

Specify the illumination brightness level ranging from 1 to 10 for the 2D reader. The default value is 10 which represents 100% illumination brightness.

Mobile Phone/Display Mode

By default, this check box is not ticked. With this check box ticked to enable display mode, there is a big improvement in reading barcodes displayed on mobile phones and electronic displays.

Picklist Mode

For 2D scanners, 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.

DPM Mode

With a DPM mode specified, the scanner is capable of reading direct part mark of 2D barcodes. Note that once the DPM mode is selected, the Picklist Mode and Mobile Phone/Display Mode functions will be disabled automatically.

Selecting Output Interface

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

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 |
|-------------------------------------|--|
| 1500P/1502 | Default: Keyboard Wedge |
| 1560P/1562/1564A | Default: Bluetooth HID |
| 1660/1661/1662/1663/1664 | Default: Bluetooth HID |
| 2560/2564/2564MR | Default: Bluetooth HID |
| 1504x Series | Capable of detecting the interface |
| 1704 | Capable of detecting the interface |
| 2500/2504/2504MR | Capable of detecting the interface |
| 1560P/1562 via 3656 | Default: USB HID |
| 1660 via 3610 | Default: USB HID |
| 1661/1662/1663/1664 via 3610 | (1) Default: USB HID (2) Default: Direct USB Virtual COM if using the "Direct" USB cable in Memory Mode |
| 2560/2564/2564MR via Bluetooth Base | Default: USB HID |

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

- ▶ For 1560P/1562/1564A/2560/2564/2564MR 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 1660/1661/1662/1663/1664 scanners, install batteries and press the [Power/Delete] key to turn it on.
-

In This Chapter

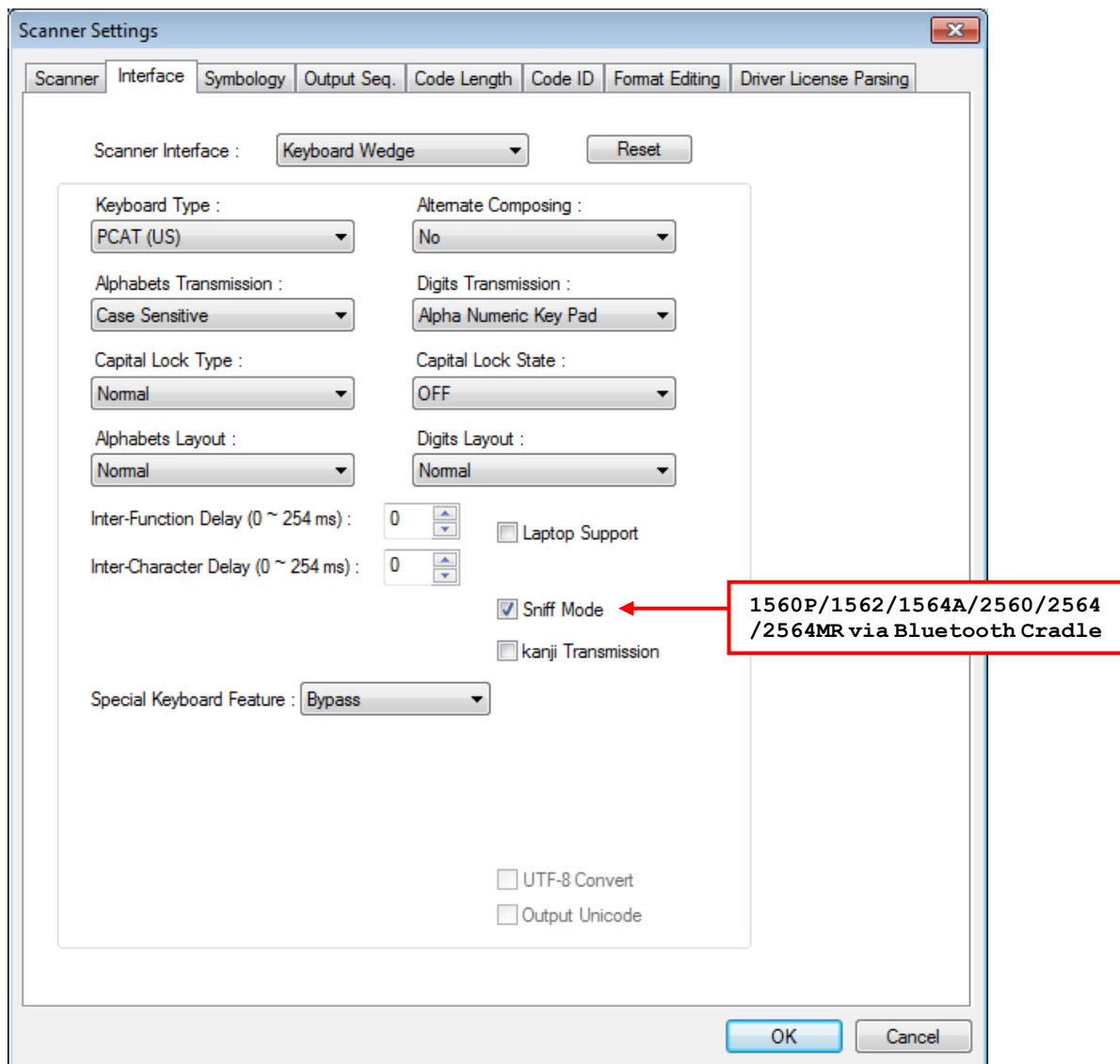
| | |
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2.1 Keyboard Wedge

This interface is for the following scanners:

- ▶ 1000A/1500P/1502/1504P(B)/1704
- ▶ 1560P/1564A/1562 (via Bluetooth Cradle)
- ▶ 2500/2504/2504MR
- ▶ 2560/2564/2564MR (via Bluetooth Cradle)

Use a “Y-shaped” keyboard wedge cable to connect between the scanner (or Bluetooth Cradle), 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 Wedge keyboard type is set to PCAT (US). The keyboard types supported may vary depending on models of product.

Keyboard Wedge Keyboard Types

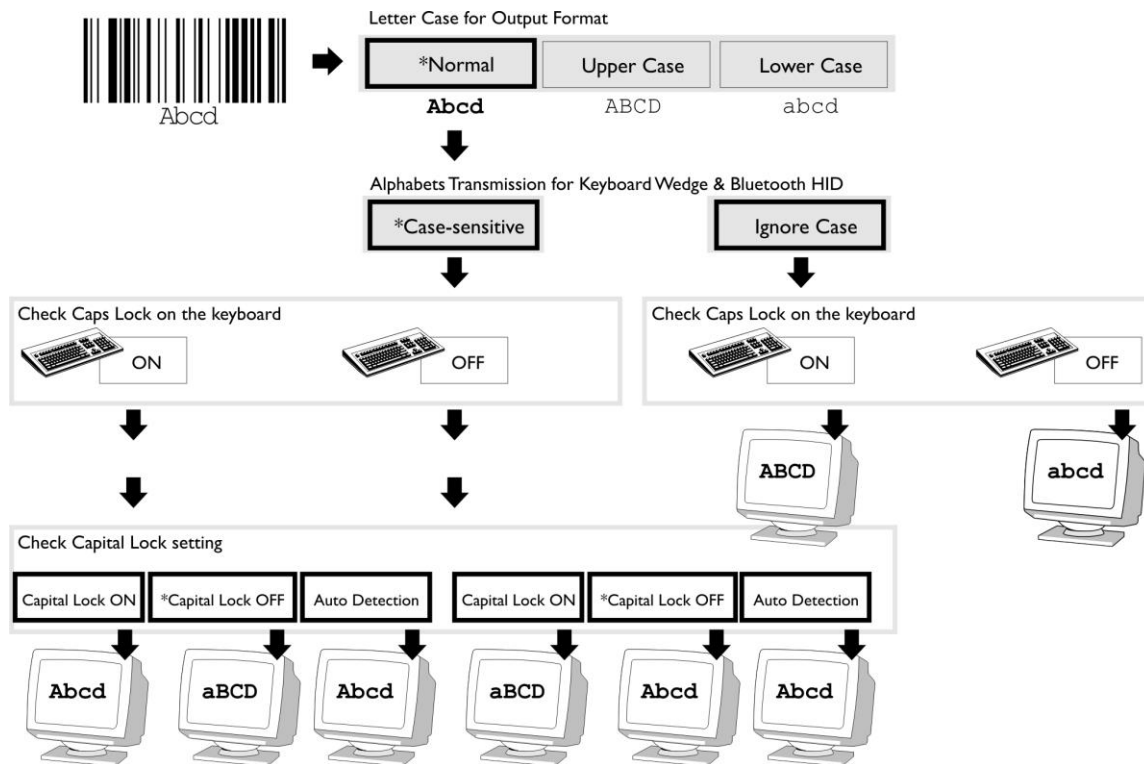
| No. | Keyboard Type | No. | Keyboard Type |
|-----|-----------------------|-----|---------------------------------------|
| 1 | PCAT (US) | 26 | IBM 3477 Type 4 (Japanese) |
| 2 | PCAT (French) | 27 | PS2-30 |
| 3 | PCAT (German) | 28 | IBM 34XX/319X, Memorex Telex 122 Keys |
| 4 | PCAT (Italian) | 29 | User-defined table |
| 5 | PCAT (Swedish) | 30 | PCAT (Turkish) |
| 6 | PCAT (Norwegian) | 31 | PCAT (Hungarian) |
| 7 | PCAT (UK) | 32 | PCAT (Switzerland German) |
| 8 | PCAT (Belgium) | 33 | PCAT (Danish) |
| 9 | PCAT (Spanish) | 34 | Reserved |
| 10 | PCAT (Portuguese) | 35 | PCAT (Greek) |
| 11 | PS55 A01-1 | 36 | Reserved |
| 12 | PS55 A01-2 (Japanese) | 37 | PCAT (Russian) |
| 13 | PS55 A01-3 | 38 | Reserved |
| 14 | PS55 001-1 | 39 | Reserved |
| 15 | PS55 001-81 | 40 | Reserved |
| 16 | PS55 001-2 | 41 | Reserved |
| 17 | PS55 001-82 | 42 | PCAT (Cyrillic on Russian) |
| 18 | PS55 001-3 | 43 | PCAT (Armenian) |
| 19 | PS55 001-8A | 44 | PCAT (Thai) |
| 20 | PS55 002-1, 003-1 | 45 | PCAT (Slovenian) |
| 21 | PS55 002-81, 003-81 | 46 | PCAT (Mexican Spanish) |
| 22 | PS55 002-2, 003-2 | 47 | PCAT (Traditional Chinese) |
| 23 | PS55 002-82, 003-82 | 48 | PCAT (Switzerland French) |
| 24 | PS55 002-3, 003-3 | 49 | PCAT (Czech) |
| 25 | PS55 002-8A, 003-8A | | |

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

2.1.6 Capital Lock State

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

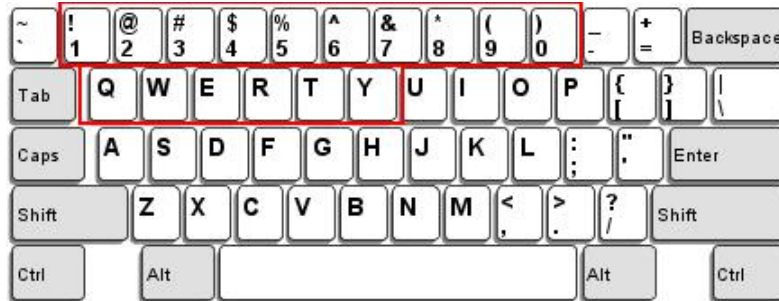
| Capital Lock State | Description |
|-------------------------|---|
| <i>Capital Lock OFF</i> | Assuming that the status of Caps Lock on the keyboard is OFF, transmitted characters are exactly the same as in the barcode (when "case-sensitive" is selected for Alphabets Transmission). |
| <i>Capital Lock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

2.1.7 Alphabets Layout

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

US Keyboard Style – Normal

QWERTY layout, which is normally used in western countries.



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

French Keyboard Style – AZERTY

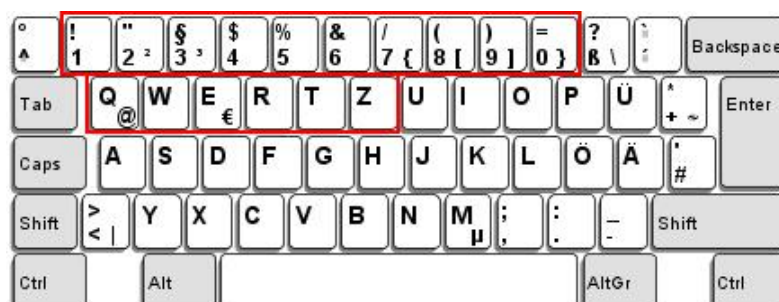
French layout; see below for French Keyboard Style.



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

German Keyboard Layout – QWERTZ

German layout; see below for German Keyboard Style.



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

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

2.1.8 Digits Layout

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

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

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

2.1.9 Laptop Support

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

2.1.10 Kanji Transmission

Kanji Transmission, supported by certain 2D scanners, 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.

2.1.13 Sniff Mode (via 3656)

This power-saving feature is enabled by default meaning the scanner will listen to the wireless network at a reduced rate while connecting via 3656.

2.1.14 Special Keyboard Feature

By default, this interface doesn't employ special function codes (0x01 ~ 0x1F) defined in the Keyboard Wedge Table for users may want to get rid of these special codes within the barcodes to avoid data error.

Or you can enable the "Bypass with Control Character Output for Windows" function to output control characters ranging from 0x01 to 0x1F in text form. For instance, [BS] (the backspace) is output rather than 0x08 when this function is enabled.

You can decide whether to apply the special keyboard feature.

2.1.15 Cable Auto-Detection

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.

2.1.16 UTF-8 Convert

This function, disabled by default, is only for certain keyboard types listed in the table below. Enable this function to ensure that the scanner gets the UTF-8-encoded data.

| No. | Keyboard Type | No. | Keyboard Type |
|-----|----------------------------|-----|----------------------------|
| 2 | PCAT (French) | 44 | PCAT (Thai) |
| 3 | PCAT (German) | 45 | PCAT (Slovenian) |
| 32 | PCAT (Switzerland German) | 46 | PCAT (Mexican Spanish) |
| 35 | PCAT (Greek) | 47 | PCAT (Traditional Chinese) |
| 37 | PCAT (Russian) | 48 | PCAT (Switzerland French) |
| 42 | PCAT (Cyrillic on Russian) | 49 | PCAT (Czech) |
| 43 | PCAT (Armenian) | | |

Output Unicode

Generally, there's no problem receiving data in traditional Chinese while you are using kinds of text editor except Microsoft Word.

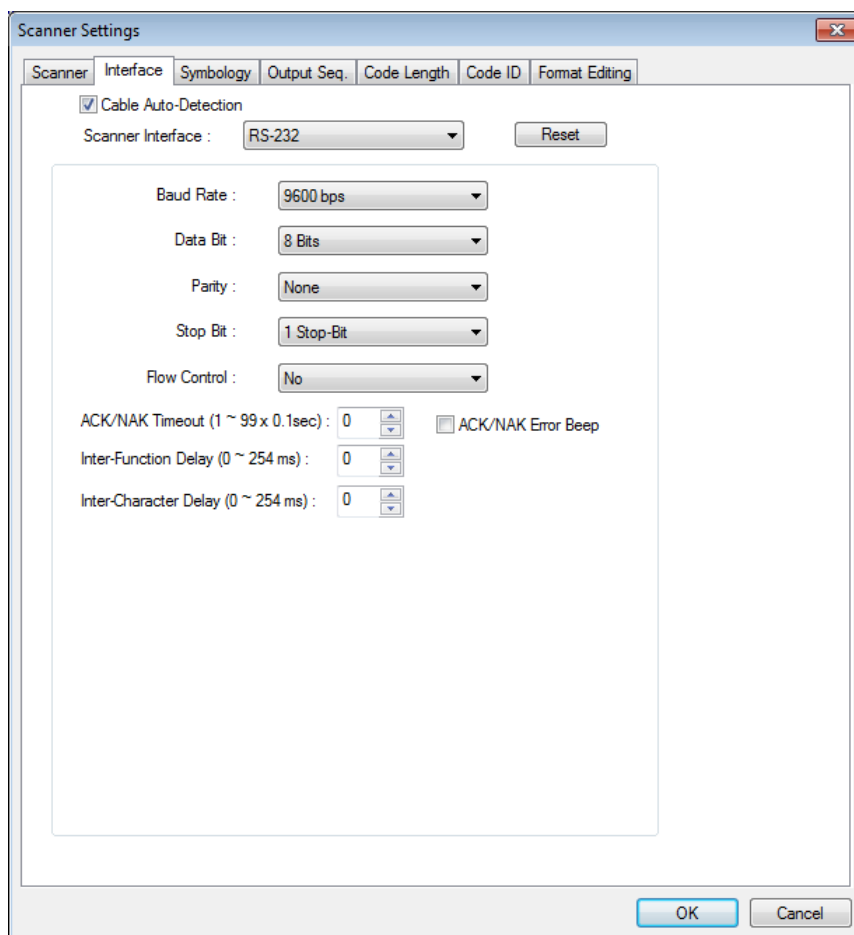
Please enable this function to have the scanner output texts in Unicode while using Microsoft Word.

2.2 RS-232

This interface is for the following scanners:

- ▶ 1000A/1500P/1502/1504A/1504P(B)/1704
- ▶ 1560P/1562/1564A (via 3656)
- ▶ 2500/2504/2504MR/2560/2564/2564MR

Connect the scanner 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

The default baud rate is set to 9600 bps for 1000A/1500P/1502 while 115200bps for other models of product and Bluetooth cradle. Select other value that matches your computer settings.

2.2.2 Data Bits

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

2.2.3 Parity

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

2.2.4 Stop Bit

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

2.2.5 Flow Control

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

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

2.2.6 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 meaning the scanner will listen to the wireless network at a reduced rate while connecting via the Bluetooth cradle.

2.2.10 Cable Auto-Detection

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 |

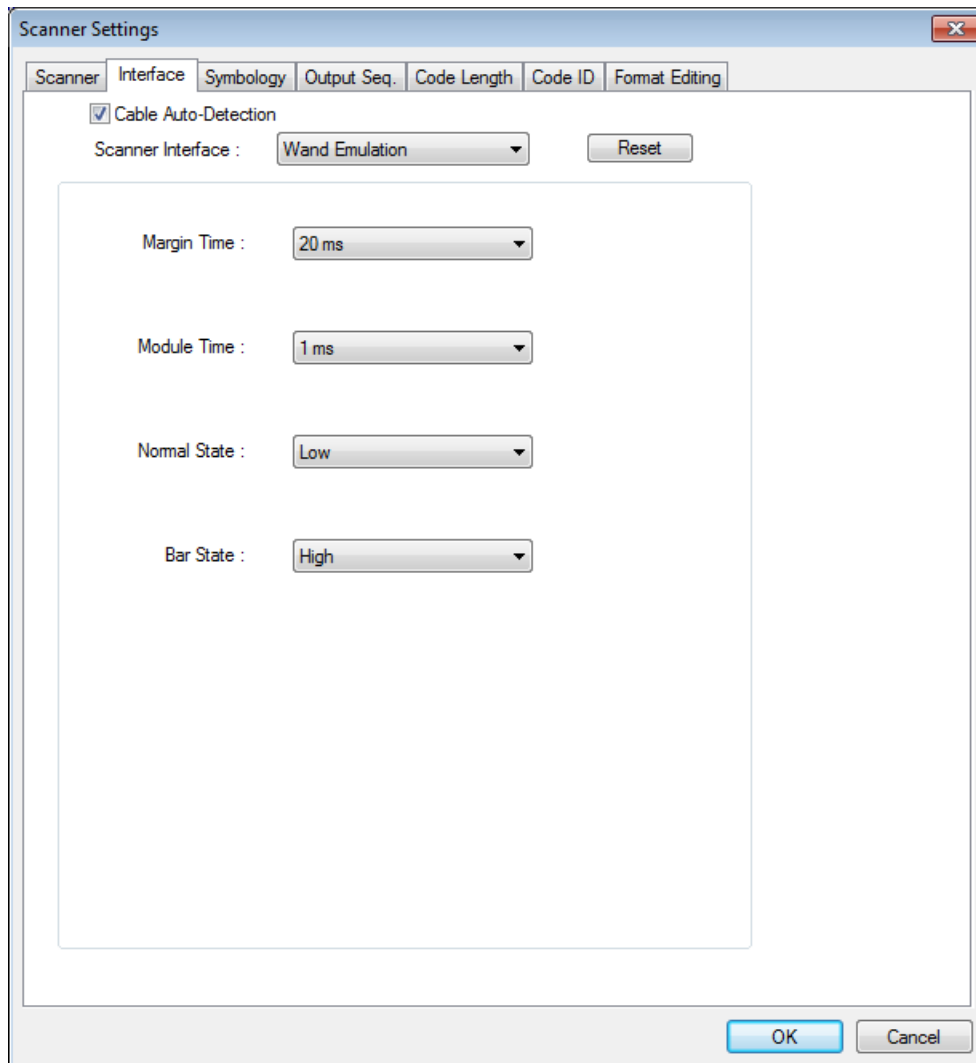
Note: If "USB Virtual COM" is desired, select it and download the setting to the scanner.

2.3 Wand Emulation

This interface is for the following scanners:

- ▶ 1500P/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.

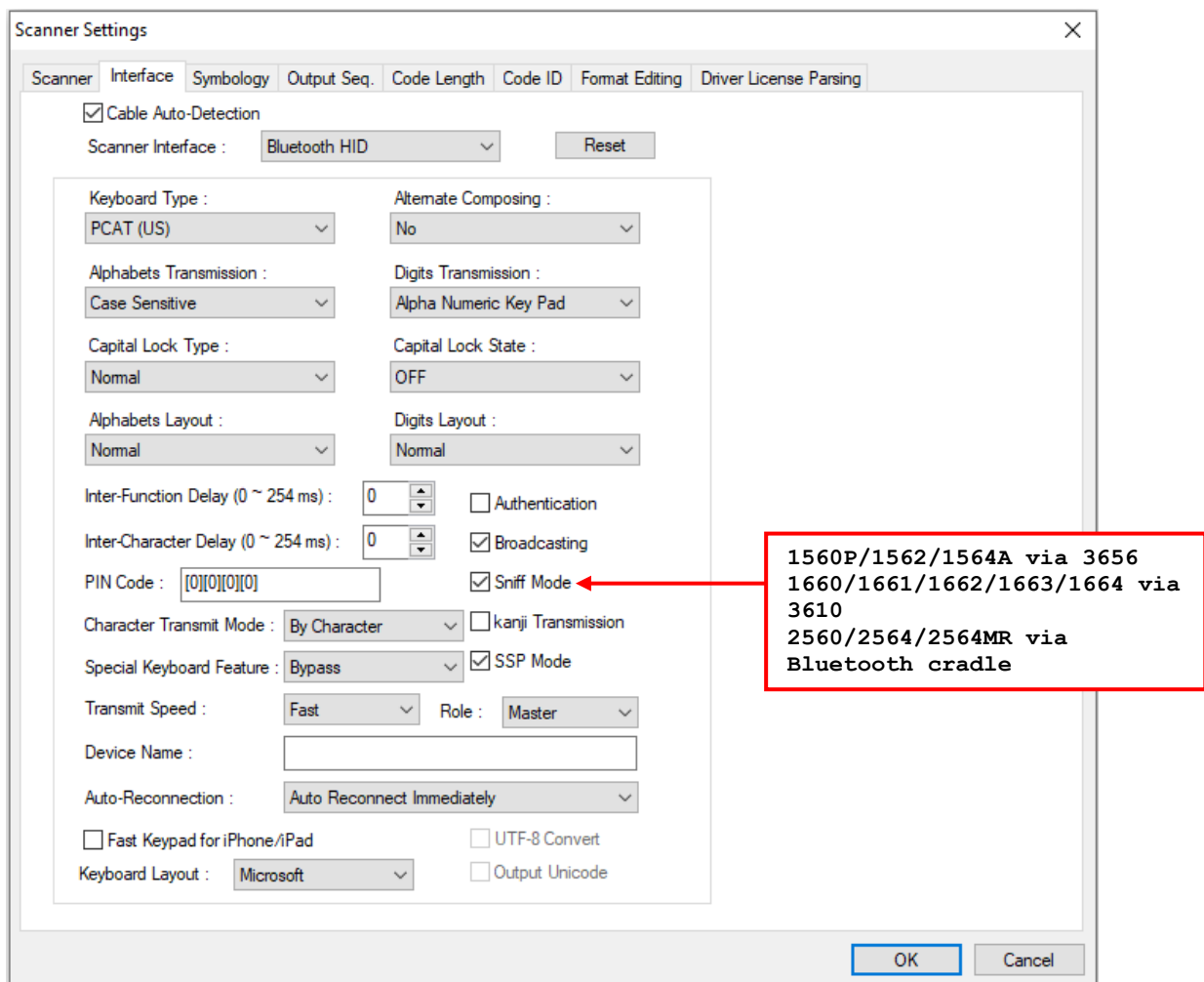
2.4 Bluetooth HID

This interface is provided for the following scanners:

- ▶ 1560P/1562/1564A (connecting to dongle or via 3656)
- ▶ 1660/1661/1662/1663/1664 (connecting to dongle or via 3610)
- ▶ 2560/2564/2564MR (connecting to dongle or via Bluetooth base)

In this interface, re-connection is made easy and reliable, just like connecting with 3610 (for 1660/1661/1662/1663/1664), 3656 (for 1560P/1562/1564A), or Bluetooth cradle (2560/2564/2564MR). 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 with 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 Bluetooth HID keyboard type is set to PCAT (US). The keyboard types supported may vary depending on models of product.

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

2.4.2 Keyboard Settings

Refer to [2.1 Keyboard Wedge](#).

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

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

2.4.3 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.

2.4.4 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 Character Transmit Mode

By default, HID interface sends data to the host character by character. You may change it to process data in batch.

2.4.6 Special Keyboard Feature

Please refer to [2.1.14 Special Keyboard Feature](#).

2.4.7 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 mobile device to connect to the scanner. If the PIN or passkey is incorrect, any connection attempt will be turned down by the scanner.

☒ Authentication

PIN Code :

Enable Authentication with Random PIN or No Authentication

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


☐ Authentication

Use random PIN → ☐ Choose a passkey for me

No PIN required → ☐ Don't use a passkey

☐ Use the passkey found in the documentation:

☐ Let me choose my own passkey:

 You should always use a passkey, unless your device does not support one. We recommend using a passkey that is 8 to 16 digits long. The longer the passkey, the more secure it will be.

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 required" 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.

2.4.8 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 mobile device. 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).

2.4.9 Sniff Mode

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

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

2.4.10 Kanji Transmission

Kanji Transmission, supported by certain 2D scanners, 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.

2.4.11 SSP Mode

Secure Simple Pairing (SSP), introduced in *Bluetooth*[®] Core Specification 2.1 + EDR, is a new feature designed to ease the pairing process while keeping up the communication security level. Click the check box to enable SSP mode for users to get rid of the burden creating a long personal identification number (PIN) to ensure a secure connection. Instead, Secure Simple Pairing achieves the same maximum encryption strength without any user interaction when pairing your scanner and a *Bluetooth*[®] device.

2.4.12 Transmit Speed

By default, the BT HID transmit speed is set to normal. Users can click the drop-down menu and select the Fast option to have the scanner work in quicker transmit speed.

2.4.13 Role

By default, the BT HID role is set to master. Users can simply switch the scanner between slave and master by this item.

2.4.14 Device Name

By default, the device name (local host name) combines the model name with serial number (for example, 1664AS2000001). Users can configure the device name with length up to 13 characters. Click the text field to bring up a Grid Control dialog, and specify the device name simply by clicking the characters listed in the table.

2.4.15 Auto-Reconnection

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

- ▶ **Auto Reconnect Immediately:** Set by default. The scanner will automatically reconnect to a paired device after disconnection.
- ▶ **Auto Reconnect On Data:** This option has the scanner reconnect to a paired device after disconnection when data scanning occurs.
- ▶ **Auto Reconnect Off:** Disable auto-reconnection.

2.4.16 Fast Keypad for iPhone/iPad

When the scanner has been successfully connected to iPhone or iPad for data collection, the onscreen keypad of iPhone/iPad will disappear by default. Check the check box to show the keypad if necessary.

2.4.17 UTF-8 Convert

This function, disabled by default, is only for certain keyboard types listed in the table below. Enable this function to ensure that the scanner gets the UTF-8-encoded data.

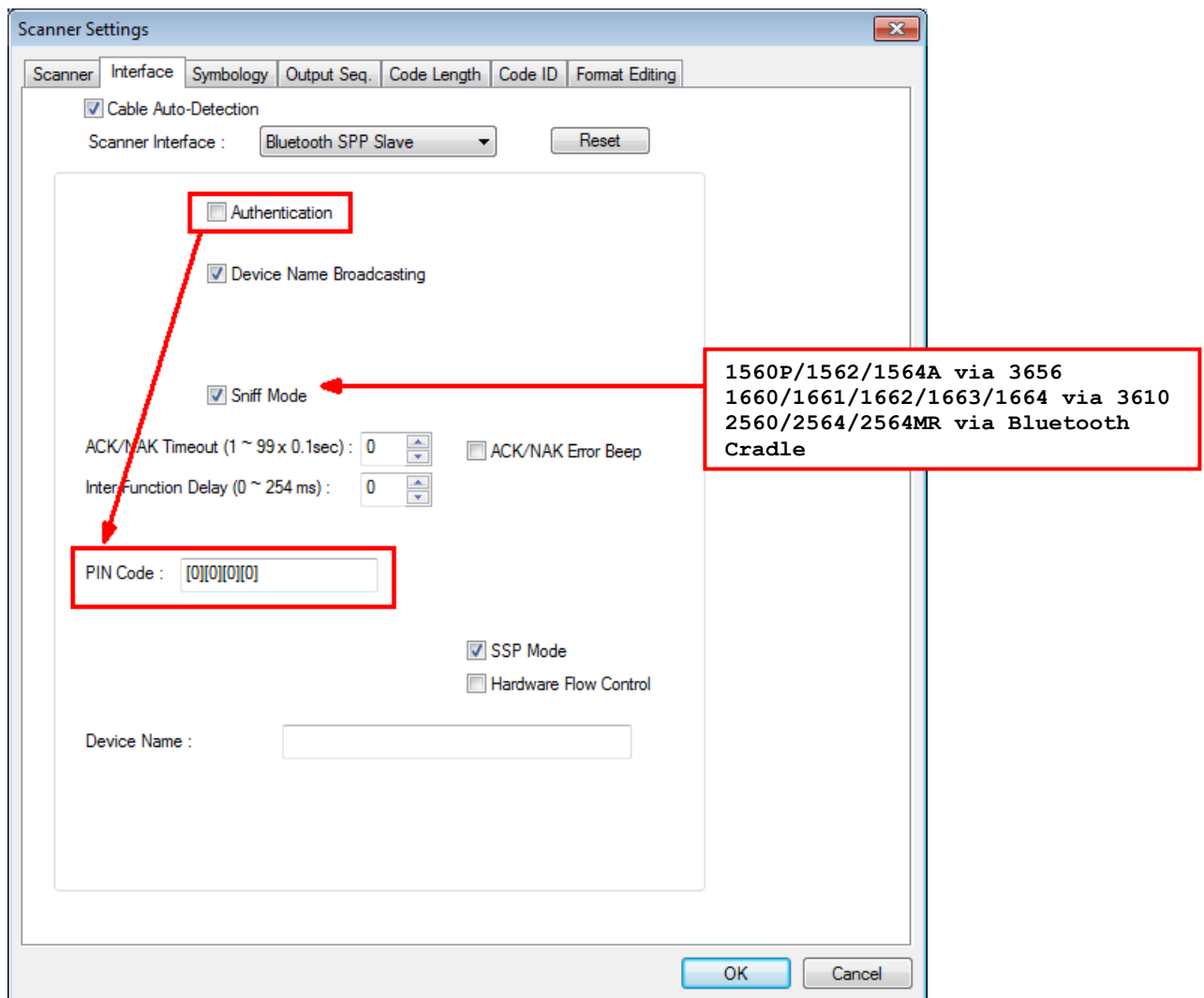
| No. | Keyboard Type | No. | Keyboard Type |
|-----|---------------------------|-----|----------------------------|
| 65 | PCAT (French) | 88 | PCAT (Cyrillic on Russian) |
| 66 | PCAT (German) | 89 | PCAT (Armenian) |
| 78 | PCAT (Switzerland German) | 90 | PCAT (Thai) |
| 81 | PCAT (Greek) | 91 | PCAT (Slovenian) |
| 83 | PCAT (Russian) | 92 | PCAT (Mexican Spanish) |

2.5 Bluetooth SPP Slave Mode

This interface is provided for the following scanners:

- ▶ 1560P/1562/1564A (connecting to dongle or via 3656)
- ▶ 1660/1661/1662/1663/1664 (connecting to dongle or via 3610)
- ▶ 2560/2564/2564MR (connecting to dongle or via Bluetooth Cradle)

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 mobile device to connect to the scanner. If the PIN or passkey is incorrect, any connection attempt will be turned down by the scanner.

☒ Authentication

PIN Code :

Enable Authentication with Random PIN or No Authentication

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


☐ Authentication

Add Bluetooth Device Wizard

Do you need a passkey to add your device?

To answer this question, refer to the "Bluetooth" section of the documentation that came with your device. If the documentation specifies a passkey, use that one.

☒ Choose a passkey for me
☐ Use the passkey found in the documentation:
☐ Let me choose my own passkey:
☐ Don't use a passkey

 You should always use a [passkey](#), unless your device does not support one. We recommend using a passkey that is 8 to 16 digits long. The longer the passkey, the more secure it will be.

Use random PIN

 → ☒ Choose a passkey for me

No PIN required

 → ☐ Don't use a passkey

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 required" 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 mobile device. 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 Device Name

By default, the device name (local host name) combines the model name with serial number (for example, 1664AS2000001). Users can configure the device name with length up to 13 characters. Click the text field to bring up a Grid Control dialog, and specify the device name simply by clicking the characters listed in the table.

2.5.4 Sniff Mode

The power-saving feature is selected by default, 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 mobile device with *Bluetooth*[®] wireless technology, we suggest that you disable the power-saving setting for a more reliable connection.

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.

2.5.6 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.

2.5.7 SSP Mode

Securing Simple Pairing (SSP) is designed to ease the pairing process while keeping up the communication security level. By default, it is disabled. Check the check box to enable SSP.

2.5.8 Hardware Flow Control

By default, the data sending via Bluetooth SPP doesn't employ hardware flow control. Users, in some cases, can check this check box to prevent data loss during transmission.

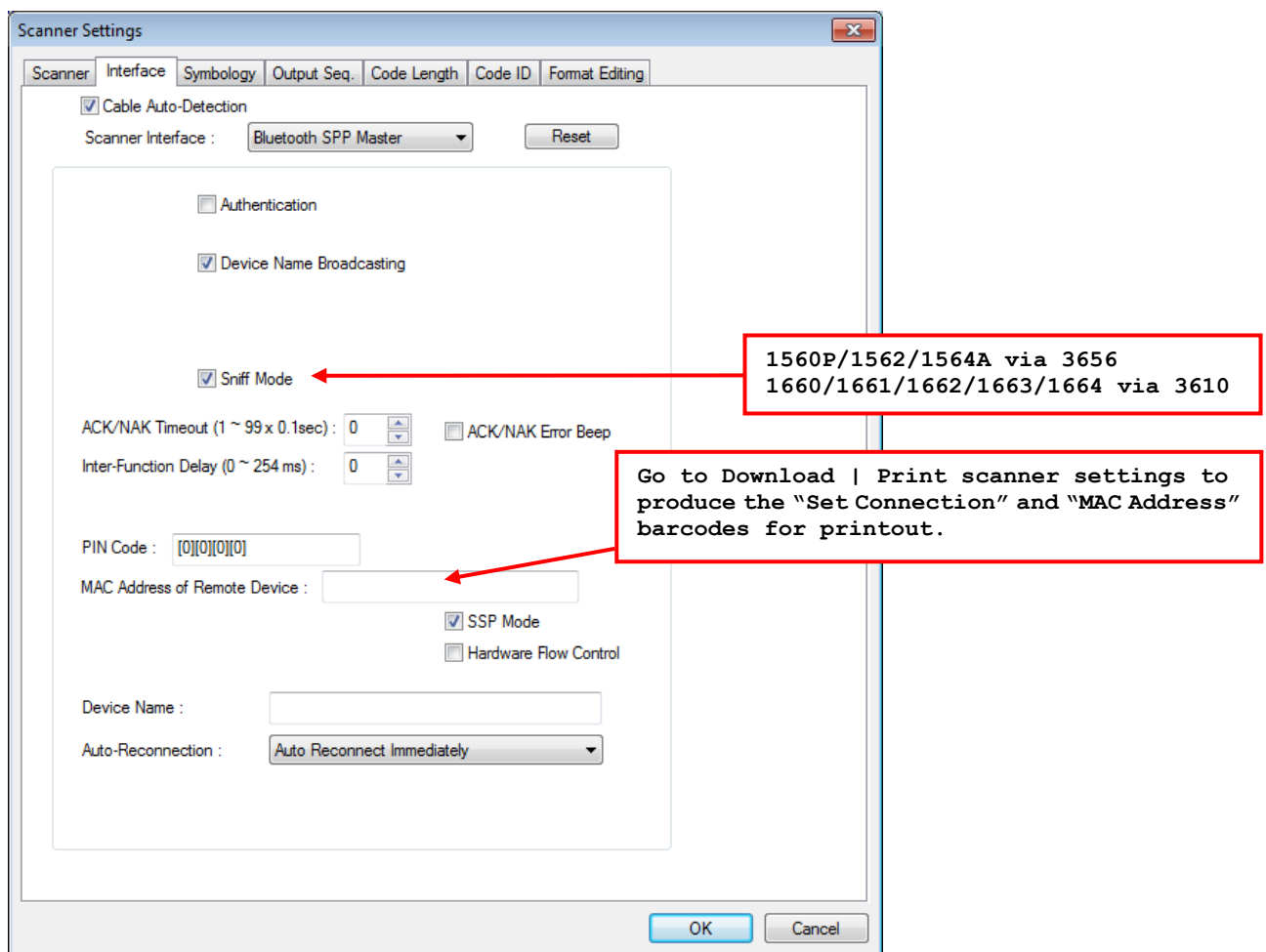
2.6 Bluetooth SPP Master Mode

This interface is provided for the following scanners:

- ▶ 1560P/1562/1564A (connecting to dongle or via 3656)
- ▶ 1660/1661/1662/1663/1664 (connecting to dongle or via 3610)
- ▶ 2560/2564/2564MR (connecting to dongle or via Bluetooth Cradle)

In this mode, re-connection is made easy and reliable, just like connecting with 3610 (for 1660/1661/1662/1663/1664), 3656 (for 1560P/1562/1564A), or Bluetooth cradle (2560/2564/2564MR). 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.

For the connection settings, refer to [2.5 Bluetooth SPP Slave Mode](#).



Users can decide whether to have the scanner (except 1562 & 1660) automatically reconnect to a paired device after disconnection, and the occasion for reconnecting.

- ▶ **Auto Reconnect Immediately:** Set by default. The scanner will automatically reconnect to a paired device after disconnection.

- ▶ **Auto Reconnect On Data:** This option has the scanner reconnect to a paired device after disconnection when data scanning occurs.
- ▶ **Auto Reconnect Off:** Disable auto-reconnection.

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

How to connect with the target device?

Produce two setup 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

When the scanner has established a connection as a SPP slave device, you can change the interface to Bluetooth SPP Master and download settings to the scanner.

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.

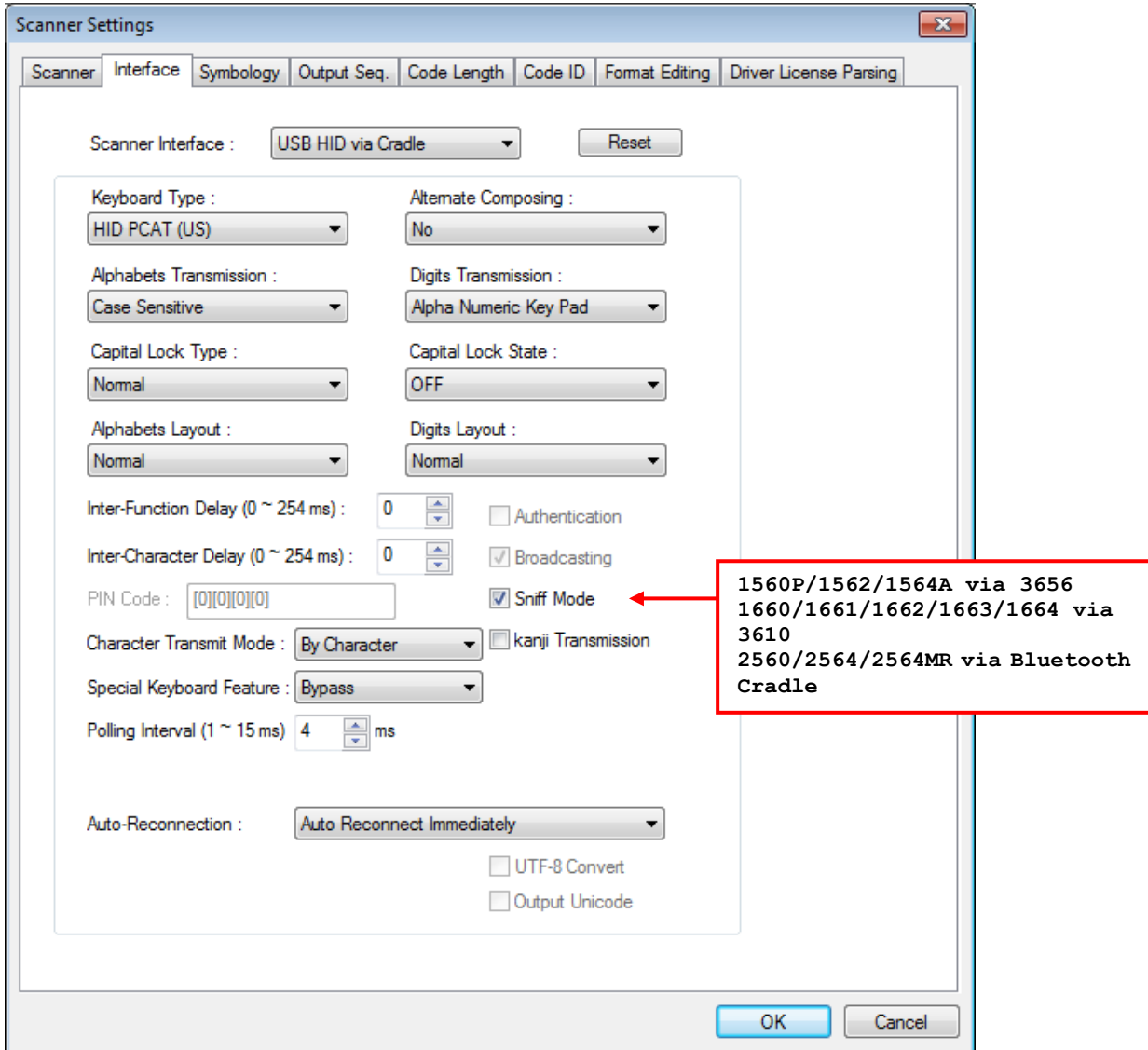
Exit SPP Master Mode

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 Cradle

This interface is provided for the following scanners:

- ▶ 1560P/1562/1564A (via 3656)
- ▶ 1660/1661/1662/1663/1664 (via 3610)
- ▶ 2560/2564/2564MR (via Bluetooth Cradle)



Kanji Transmission is made available for certain 2D scanners when the output interface is set to USB HID via 3656/3610/Bluetooth Cradle. Select Kanji Transmission to enable the scanner to transmit the Japanese characters collected from 2D barcodes to a Japanese Windows-based host computer.

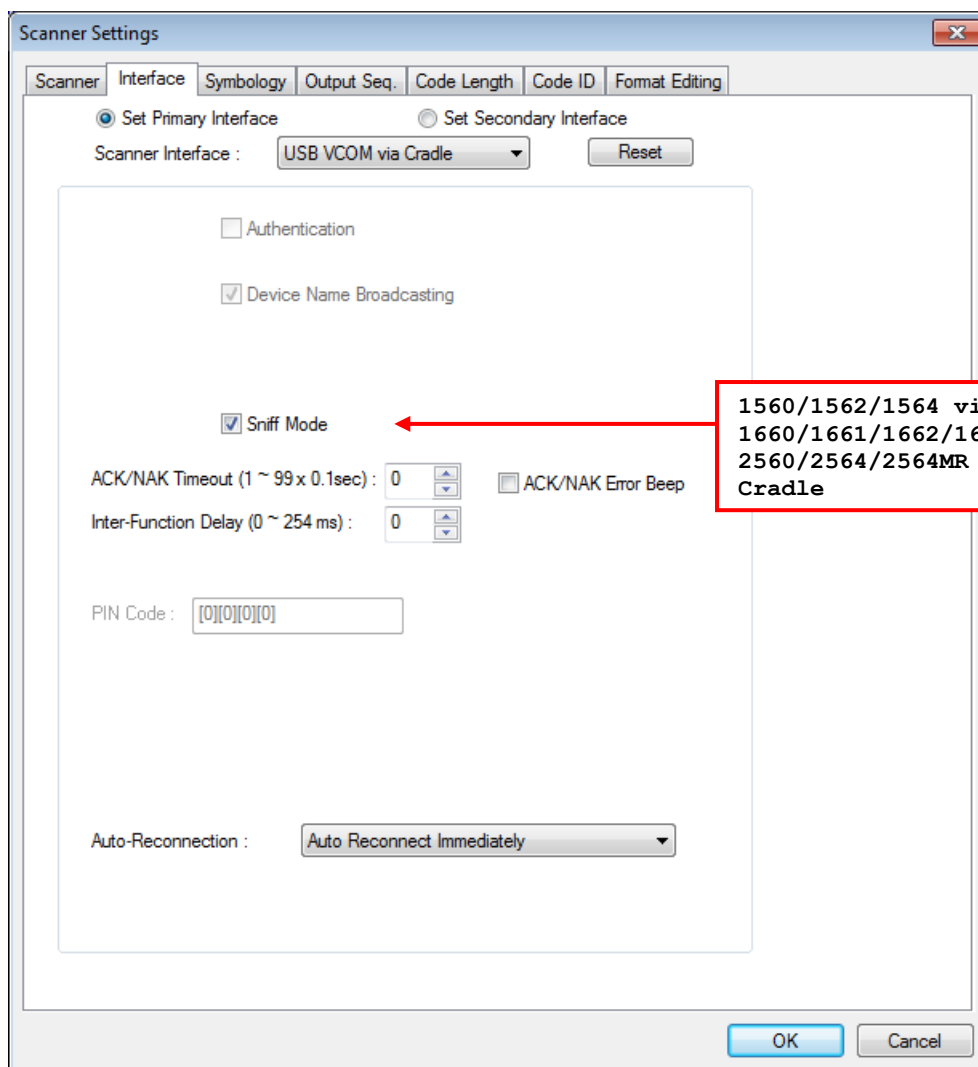
For the complete interface settings for USB HID via 3656/3610/Bluetooth Cradle, refer to [2.4 Bluetooth HID](#).

2.8 USB Virtual COM via Cradle

This interface is provided for the following scanners:

- ▶ 1560P/1562/1564A (via 3656)
- ▶ 1660/1661/1662/1663/1664 (via 3610)
- ▶ 2560/2564/2564MR (via Bluetooth Cradle)

For the connection settings, refer to [2.5 Bluetooth SPP Slave Mode](#).

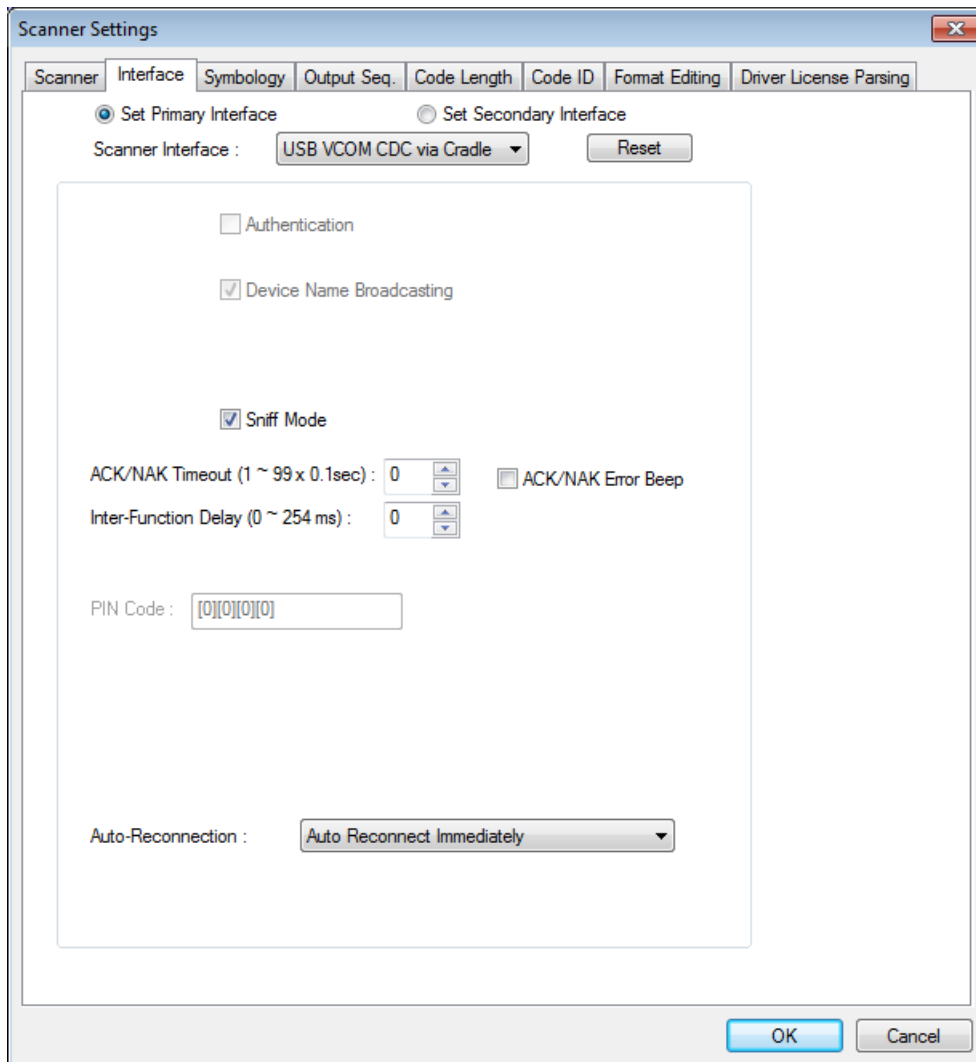


Note: If you are using USB Virtual COM for the first time, you must install its driver beforehand. The driver installer version 5.4 or later is required. Please remove older versions!

2.9 USB Virtual COM CDC via Cradle

This interface is provided for the following scanners:

- ▶ 1660/1661/1662/1663/1664 (via 3610)
- ▶ 2560/2564/2564MR (via Bluetooth Cradle)

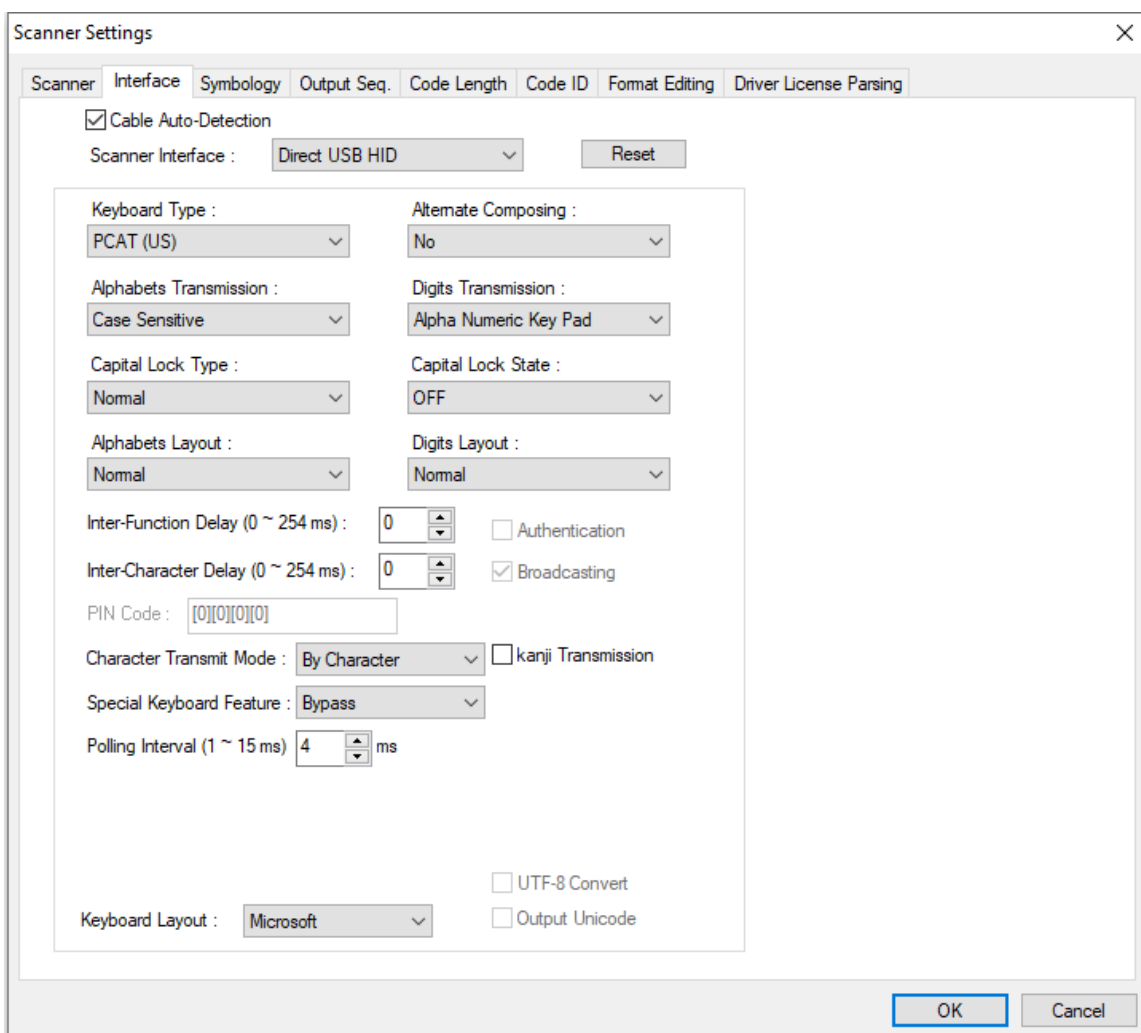


2.10 Direct USB HID

This interface is provided for the following scanners:

- ▶ 1000A
- ▶ 1500P/1504A/1504P(B)
- ▶ 1661/1662/1663/1664
- ▶ 1704
- ▶ 2500/2504/2504MR

For the connection settings, refer to [2.4 Bluetooth HID](#).



The image shows the 'Scanner Settings' dialog box with the 'Interface' tab selected. The 'Cable Auto-Detection' checkbox is checked. The 'Scanner Interface' is set to 'Direct USB HID'. The 'Reset' button is visible. The 'Keyboard Type' is set to 'PCAT (US)'. The 'Alternate Composing' is set to 'No'. The 'Alphabets Transmission' is set to 'Case Sensitive'. The 'Digits Transmission' is set to 'Alpha Numeric Key Pad'. The 'Capital Lock Type' is set to 'Normal'. The 'Capital Lock State' is set to 'OFF'. The 'Alphabets Layout' is set to 'Normal'. The 'Digits Layout' is set to 'Normal'. The 'Inter-Function Delay (0 ~ 254 ms)' is set to 0. The 'Inter-Character Delay (0 ~ 254 ms)' is set to 0. The 'Authentication' checkbox is unchecked. The 'Broadcasting' checkbox is checked. The 'PIN Code' is set to [0][0][0][0]. The 'Character Transmit Mode' is set to 'By Character'. The 'kanji Transmission' checkbox is unchecked. The 'Special Keyboard Feature' is set to 'Bypass'. The 'Polling Interval (1 ~ 15 ms)' is set to 4 ms. The 'Keyboard Layout' is set to 'Microsoft'. The 'UTF-8 Convert' checkbox is unchecked. The 'Output Unicode' checkbox is unchecked. The 'OK' and 'Cancel' buttons are at the bottom right.

Scanner Settings

Scanner Interface : Direct USB HID Reset

Keyboard Type : PCAT (US) Alternate Composing : No

Alphabets Transmission : Case Sensitive Digits Transmission : Alpha Numeric Key Pad

Capital Lock Type : Normal Capital Lock State : OFF

Alphabets Layout : Normal Digits Layout : Normal

Inter-Function Delay (0 ~ 254 ms) : 0 Authentication

Inter-Character Delay (0 ~ 254 ms) : 0 Broadcasting

PIN Code : [0][0][0][0]

Character Transmit Mode : By Character kanji Transmission

Special Keyboard Feature : Bypass

Polling Interval (1 ~ 15 ms) : 4 ms

Keyboard Layout : Microsoft UTF-8 Convert

Output Unicode

OK Cancel

2.10.1 Cable Auto-Detection

The scanner which supports this function 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 Secondary Interface (1661/1662/1663/1664)

Only 1661, 1662, 1663 and 1664 support "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.

With the Send Data Timeout setting given a value other than zero, the scanner will try to send data via the "Direct" USB interface. You must connect the USB cable within the specified period of time. 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.

2.10.3 Kanji Transmission

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

2.10.4 Special Keyboard Feature

Please refer to [2.1.14 Special Keyboard Feature](#).

2.10.5 Polling Interval

While using the Direct USB HID interface, users can specify the USB polling time interval ranging from 1 to 15ms.

2.10.6 UTF-8 Convert

This function, disabled by default, is only for certain keyboard types listed in the table below. Enable this function to ensure that the scanner gets the UTF-8-encoded data.

| No. | Keyboard Type | No. | Keyboard Type |
|-----|----------------------------|-----|----------------------------|
| 65 | PCAT (French) | 90 | PCAT (Thai) |
| 66 | PCAT (German) | 91 | PCAT (Slovenian) |
| 78 | PCAT (Switzerland German) | 92 | PCAT (Mexican Spanish) |
| 81 | PCAT (Greek) | 93 | PCAT (Traditional Chinese) |
| 83 | PCAT (Russian) | 94 | PCAT (Switzerland French) |
| 88 | PCAT (Cyrillic on Russian) | 95 | PCAT (Czech) |
| 89 | PCAT (Armenian) | | |

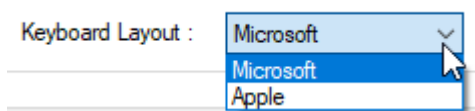
Output Unicode

Generally, there's no problem receiving data in traditional Chinese while you are using kinds of text editor except Microsoft Word.

Please enable this function to have the scanner output texts in Unicode while using Microsoft Word.

2.10.7 Keyboard Layout

By default, the scanner uses non-Apple keyboard layout. Click the drop-down menu to toggle between Apple and Microsoft keyboard layouts.

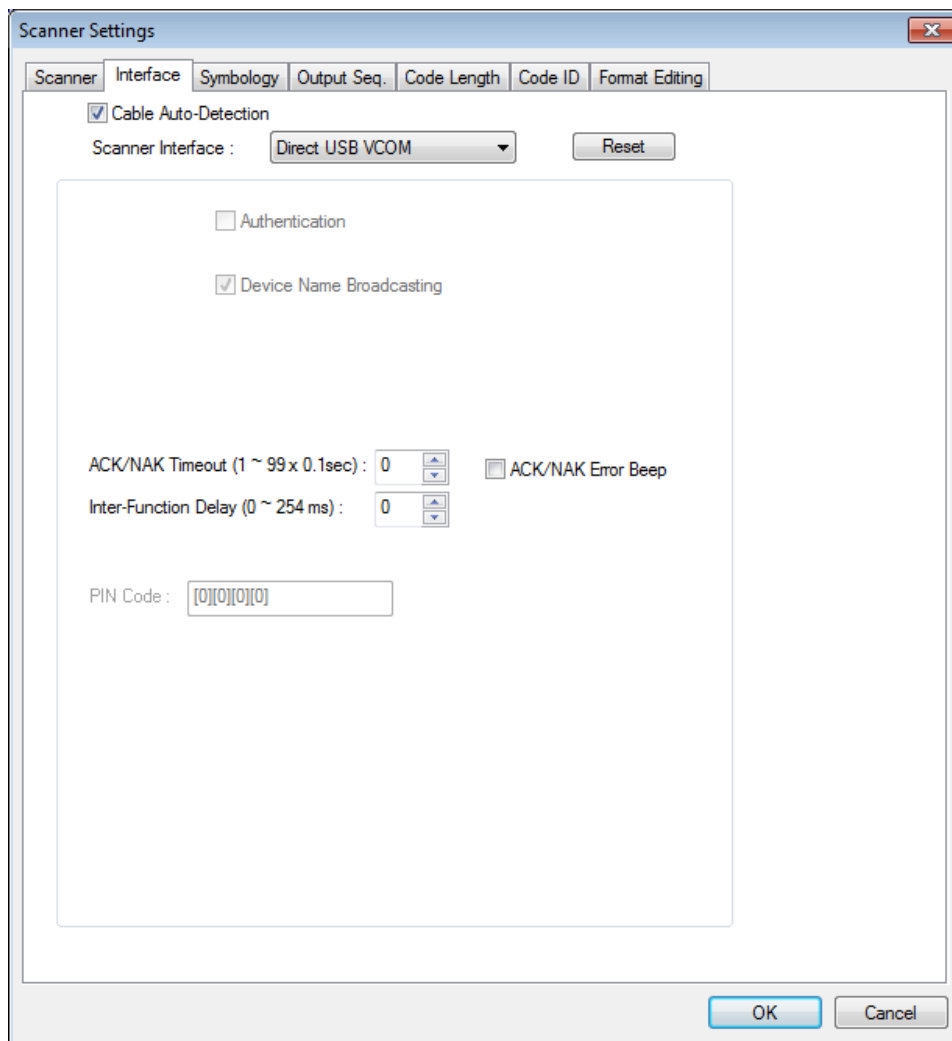


2.11 Direct USB VCOM

This interface is for the following scanners:

- ▶ 1000A
- ▶ 1500P/1504A/1504P(B)
- ▶ 1661/1662/1663/1664
- ▶ 1704
- ▶ 2500/2504/2504MR

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 beforehand. Driver installer version 5.4 or later is required. Please remove older versions! For 1070 to connect to Windows PC, you must select Direct USB VCOM_CDC. Refer to [2.12 Direct USB VCOM CDC](#).

2.11.1 Cable Auto-Detection

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.

2.11.2 Secondary Interface for 1661/1662/1663/1664

Only 1661, 1662, 1663 and 1664 support "Direct" USB interface, referred to as "the Secondary Interface", for Memory Mode use.

Enable Secondary Interface

Click the "Set Secondary Interface" radio button to 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.

With the Send Data Timeout setting given a value other than zero, the scanner will try to send data via the "Direct" USB interface. You must connect the USB cable within the specified period of time. 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 leave the "Set Secondary Interface" radio button unselected in advance to avoid sending data to host in memory mode via the cable. It will then allow charging the battery only.

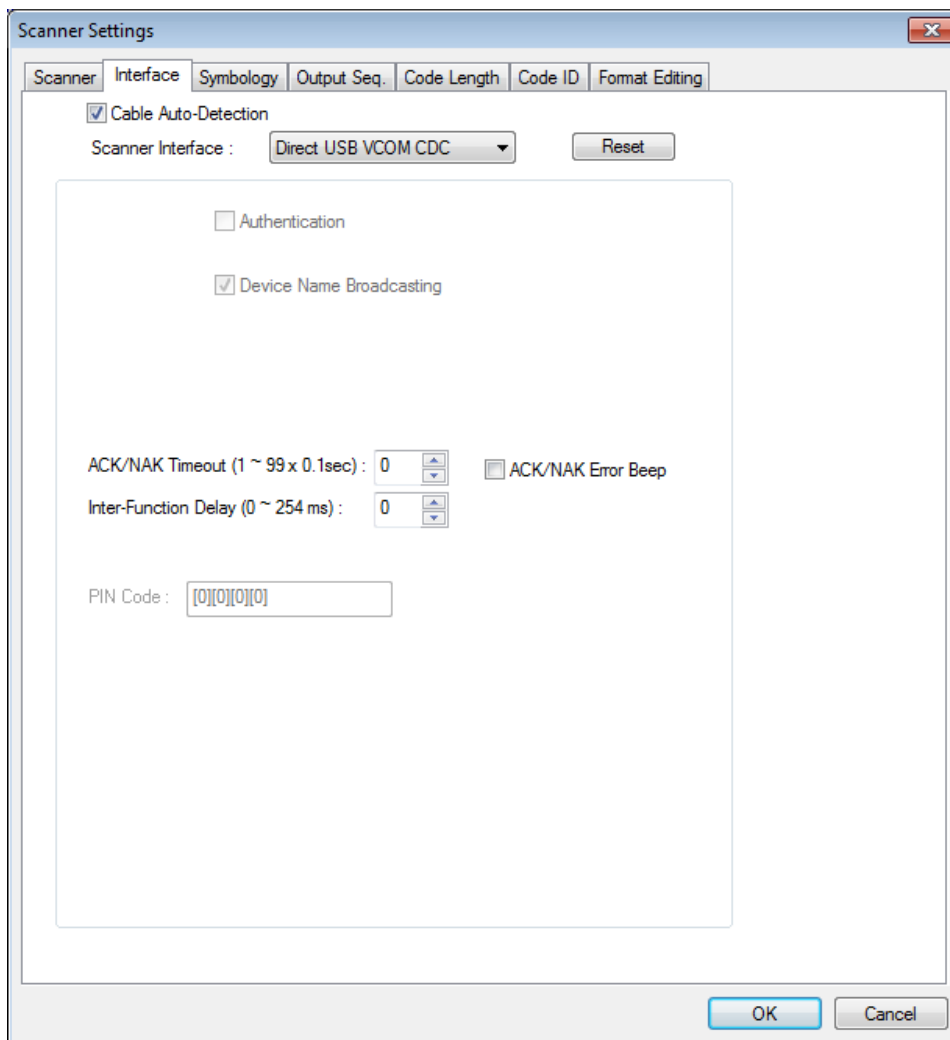
2.12 Direct USB VCOM_CDC

This interface is available for the following scanners:

- ▶ 1000A
- ▶ 1500P
- ▶ 1504A/1504P(B)
- ▶ 2500/2504/2504MR

Use the provided USB cable to connect the scanner to the USB port of PC.

For the connection settings, refer to [2.5 Bluetooth SPP Slave Mode](#).



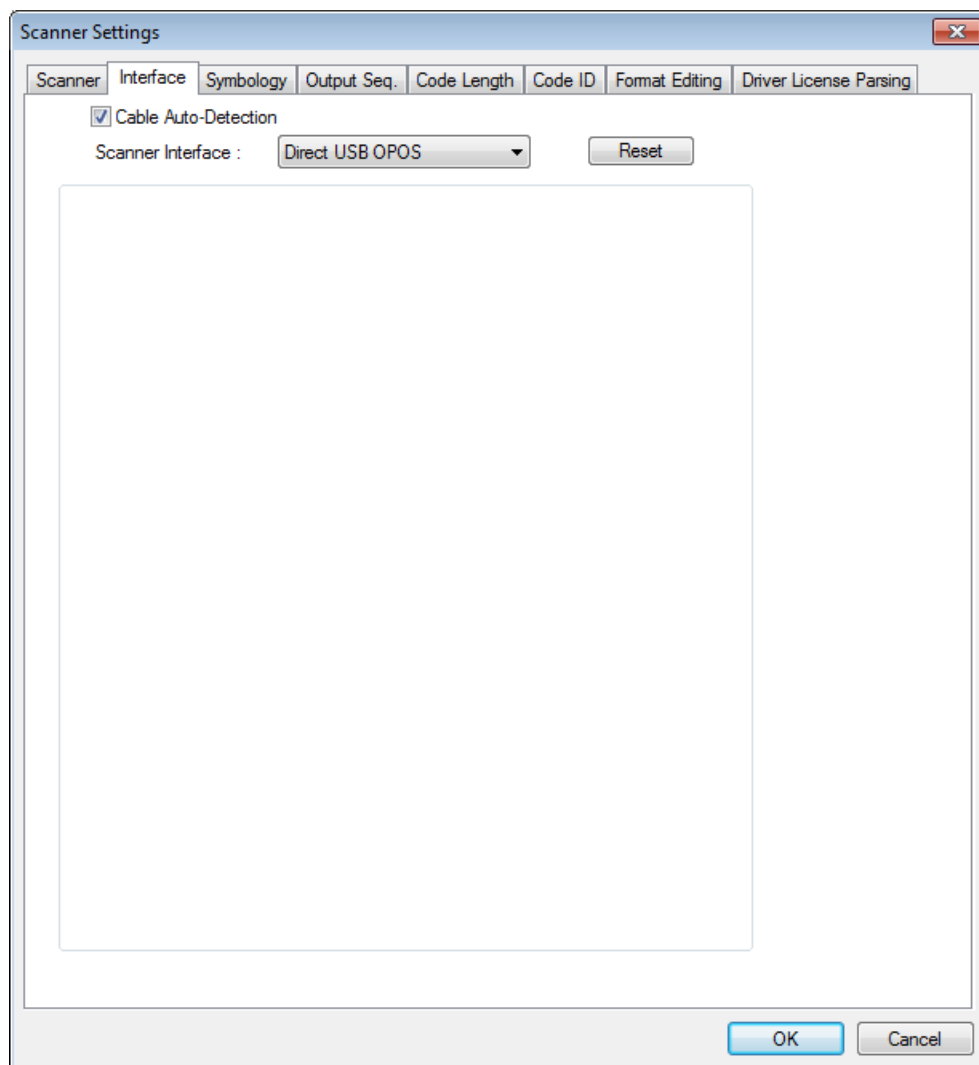
Note: If you are using USB Virtual COM_CDC for the first time, you must install its driver beforehand.

2.13 Direct USB OPOS

This interface is available for the following scanners:

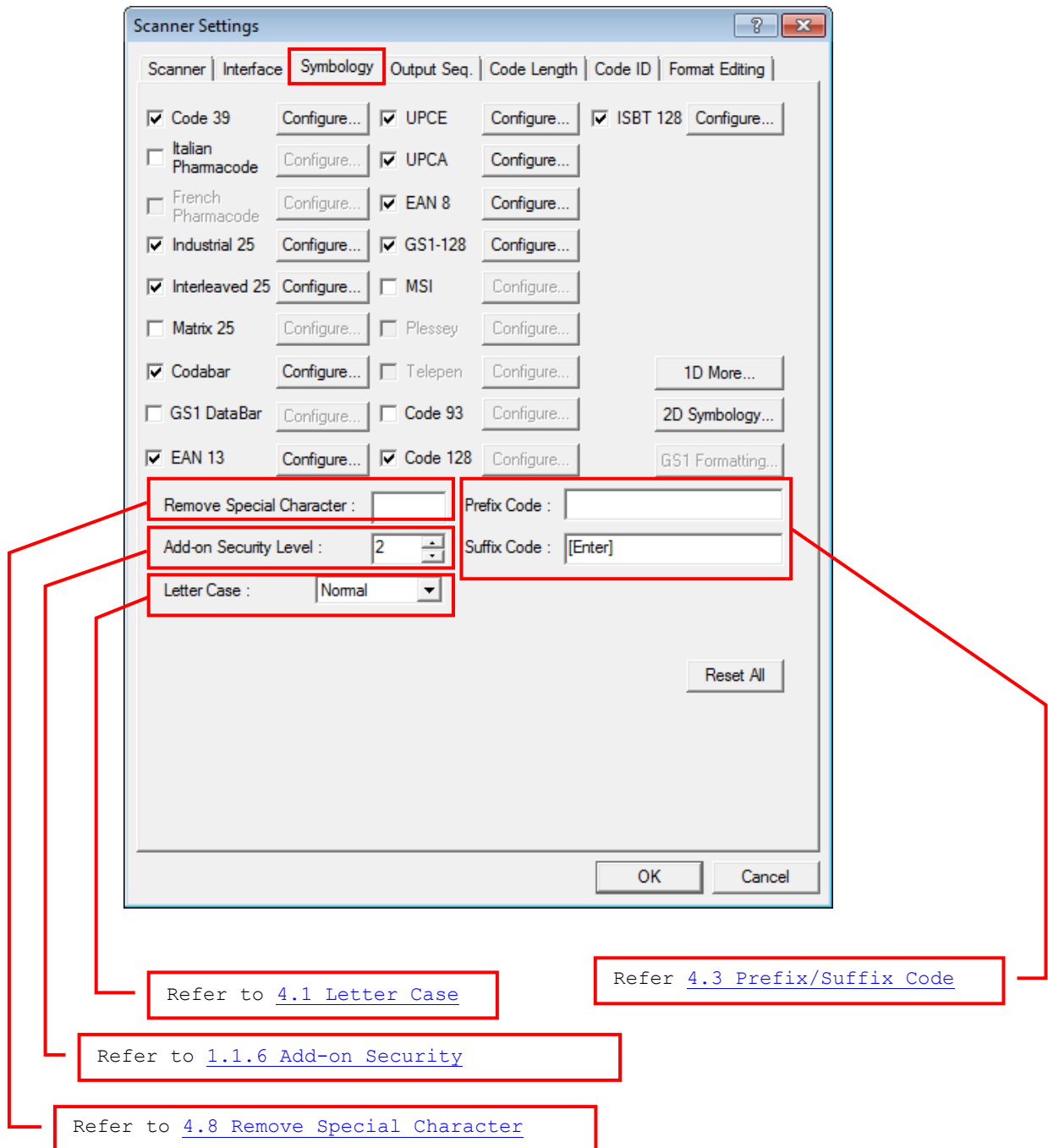
- ▶ 1000A
- ▶ 1504A/1504P(B)
- ▶ 2500/2504/2504MR/

Please refer to the CipherLab OPOS User Guide for further details.



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.



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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.

Security Level

Security Level renders more decoding accuracy giving consideration to barcodes' print quality. Select "High" or "Normal" to decide the security level for reading barcodes.

3.1.2 For 2D Scanners

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

- ▶ Advanced settings are provided as shown below.

Codabar Parameters

Start / Stop Character

☒ abcd / abcd
☐ abcd / tn*e
☐ ABCD / ABCD
☐ ABCD / TN*E

☐ Transmit Start / Stop
☐ CLSI Conversion

Security Level ▼

Length Qualification

☐ Fixed Length
☒ Max / Min Length

Max Length : 55

Min Length : 4

OK Cancel

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.

Code 25 Security Level

Security Level renders more decoding accuracy giving consideration to barcodes' print quality. Decide the security level for reading Code 25 barcodes.

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.

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.

3.3 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 Interleaved 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.

Code 25 Security Level

Security Level renders more decoding accuracy giving consideration to barcodes' print quality. Decide the security level for reading Code 25 barcodes.

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".

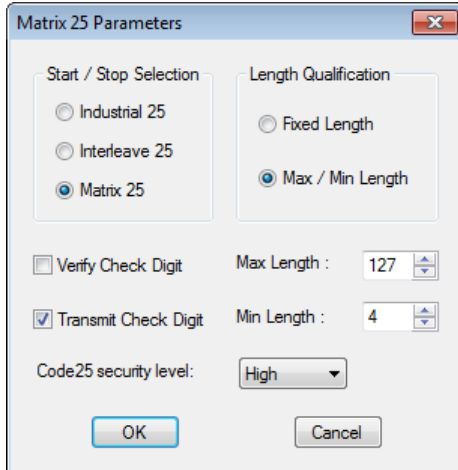
- ▶ For "Fixed Length", up to 2 fixed lengths can be specified.
- ▶ For "Max/Min Length", the maximum length and the minimum length must be specified. The scanner will only accept those barcodes with lengths that fall between max/min lengths specified.

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.



The image shows a 'Matrix 25 Parameters' dialog box. It has two main sections: 'Start / Stop Selection' and 'Length Qualification'. In 'Start / Stop Selection', 'Matrix 25' is selected with a radio button. In 'Length Qualification', 'Max / Min Length' is selected with a radio button. Below these, there are checkboxes for 'Verify Check Digit' (unchecked) and 'Transmit Check Digit' (checked). To the right of these are input fields for 'Max Length' (127) and 'Min Length' (4). At the bottom, there is a 'Code25 security level' dropdown menu set to 'High'. 'OK' and 'Cancel' buttons are at the bottom.

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.

Code 25 Security Level

Security Level renders more decoding accuracy giving consideration to barcodes' print quality. Decide the security level for reading Code 25 barcodes.

Length Qualification

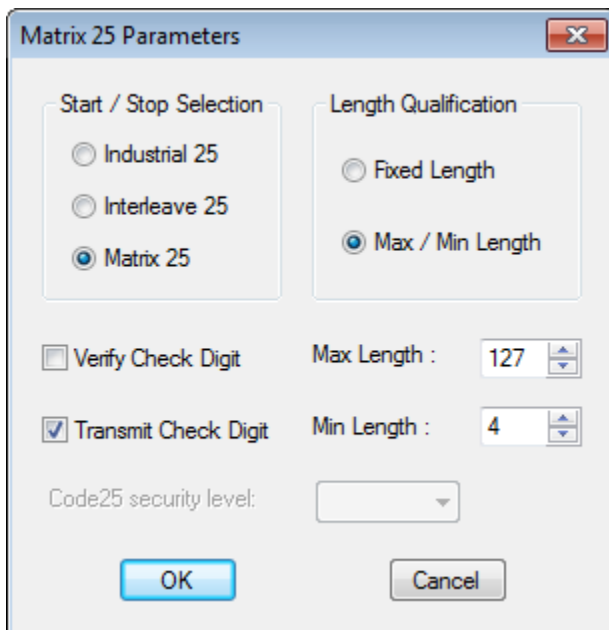
Because of the weak structure of the 2 of 5 barcodes, it is possible to make a "short scan" error. To prevent the "short scan" error, configure the "Length Qualification" settings to ensure that the correct barcode is read by qualifying the allowable code length. The barcode can be qualified by "Fixed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



The image shows a 'Matrix 25 Parameters' dialog box. It has two main sections: 'Start / Stop Selection' and 'Length Qualification'. In 'Start / Stop Selection', 'Matrix 25' is selected with a radio button. In 'Length Qualification', 'Max / Min Length' is selected with a radio button. Below these are checkboxes for 'Verify Check Digit' (unchecked) and 'Transmit Check Digit' (checked). To the right of these are spinners for 'Max Length' (set to 127) and 'Min Length' (set to 4). At the bottom, there is a 'Code25 security level' dropdown menu and 'OK' and 'Cancel' buttons.

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

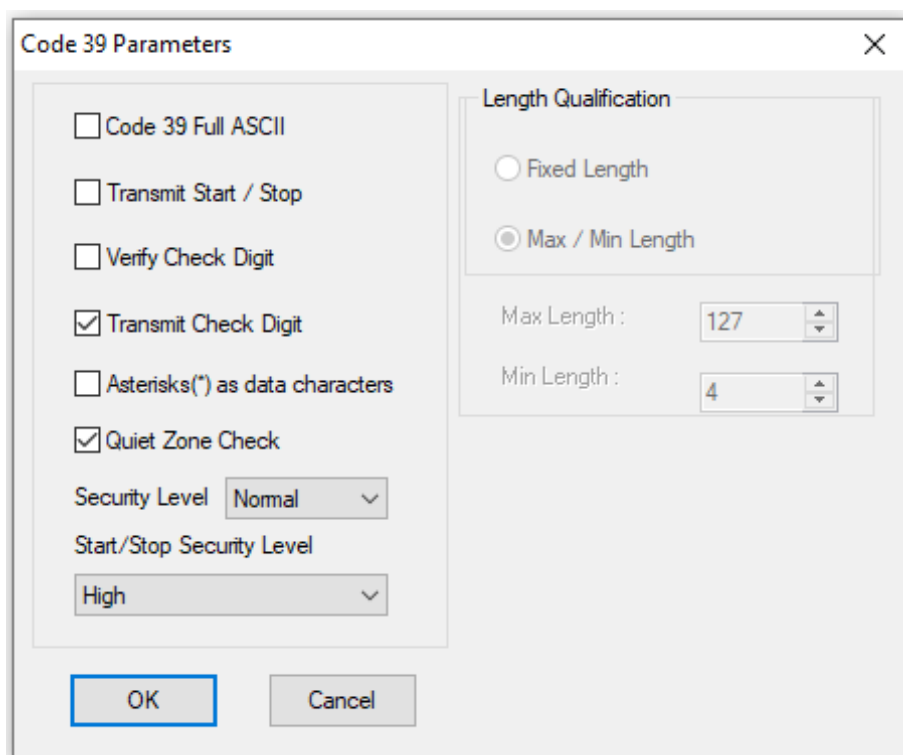
Because of the weak structure of the 2 of 5 barcodes, it is possible to make a "short scan" error. To prevent the "short scan" error, configure the "Length Qualification" settings to ensure that the correct barcode is read by qualifying the allowable code length. The barcode can be qualified by "Fixed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



The image shows a 'Code 39 Parameters' dialog box with a close button (X) in the top right corner. The dialog is divided into two main sections. The left section contains several checkboxes: 'Code 39 Full ASCII' (unchecked), 'Transmit Start / Stop' (unchecked), 'Verify Check Digit' (unchecked), 'Transmit Check Digit' (checked), 'Asterisks(*) as data characters' (unchecked), and 'Quiet Zone Check' (checked). Below these are two dropdown menus: 'Security Level' set to 'Normal' and 'Start/Stop Security Level' set to 'High'. The right section is titled 'Length Qualification' and contains two radio buttons: 'Fixed Length' (unchecked) and 'Max / Min Length' (checked). Below the radio buttons are two spin boxes: 'Max Length' set to 127 and 'Min Length' set to 4. At the bottom of the dialog are 'OK' and 'Cancel' buttons.

| Parameter | Value |
|---------------------------------|-------------------------------------|
| Code 39 Full ASCII | <input type="checkbox"/> |
| Transmit Start / Stop | <input type="checkbox"/> |
| Verify Check Digit | <input type="checkbox"/> |
| Transmit Check Digit | <input checked="" type="checkbox"/> |
| Asterisks(*) as data characters | <input type="checkbox"/> |
| Quiet Zone Check | <input checked="" type="checkbox"/> |
| Security Level | Normal |
| Start/Stop Security Level | High |
| Length Qualification | Max / Min Length |
| Max Length | 127 |
| Min Length | 4 |

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.

Asterisks(*) as data characters

Check the check box to take asterisks as part of the data.

Quiet Zone Check

Decide whether to check quiet zones of the target barcode. This function is enabled by default.

Security Level

Security Level renders more decoding accuracy giving consideration to barcodes' print quality.

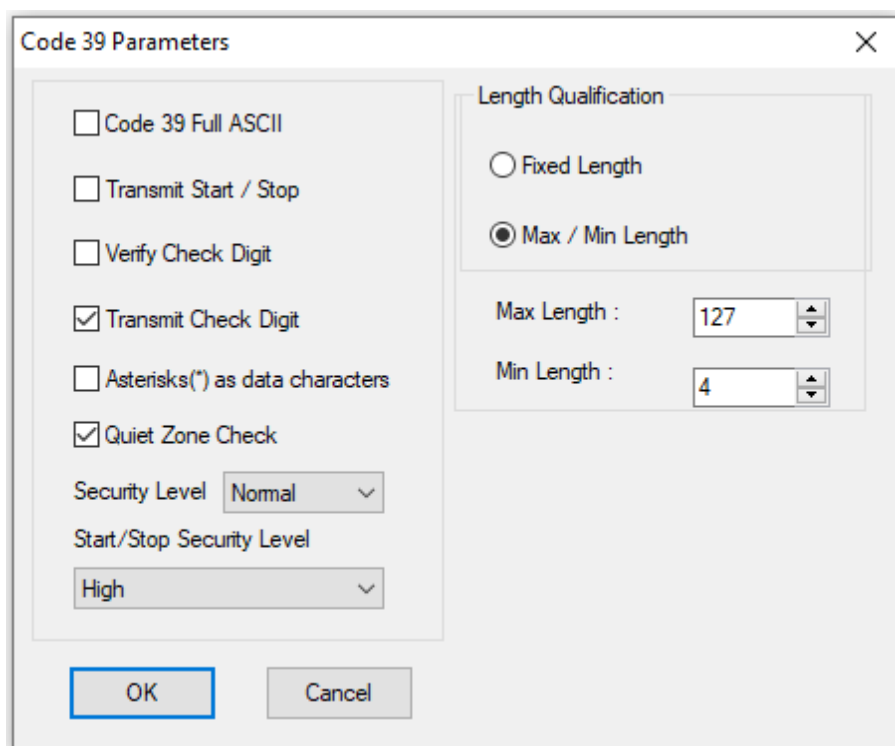
Select "High" or "Normal" to decide the security level for reading barcodes.

Start/Stop Security Level

Decide the security level of the start/stop characters for reading Code 39 barcodes.

3.5.2 For 2D Scanners

By default, the scanner is set to read Code 39 barcodes. Advanced settings are provided as shown below.



The image shows a 'Code 39 Parameters' dialog box with a close button (X) in the top right corner. The dialog is divided into two main sections. The left section contains several checkboxes: 'Code 39 Full ASCII' (unchecked), 'Transmit Start / Stop' (unchecked), 'Verify Check Digit' (unchecked), 'Transmit Check Digit' (checked), 'Asterisks(*) as data characters' (unchecked), and 'Quiet Zone Check' (checked). Below these are two dropdown menus: 'Security Level' set to 'Normal' and 'Start/Stop Security Level' set to 'High'. The right section is titled 'Length Qualification' and contains two radio buttons: 'Fixed Length' (unchecked) and 'Max / Min Length' (checked). Below the radio buttons are two spin boxes: 'Max Length' set to 127 and 'Min Length' set to 4. At the bottom of the dialog are 'OK' and 'Cancel' buttons.

Code 39 Parameters

☐ Code 39 Full ASCII

☐ Transmit Start / Stop

☐ Verify Check Digit

☒ Transmit Check Digit

☐ Asterisks(*) as data characters

☒ Quiet Zone Check

Security Level: Normal

Start/Stop Security Level: High

Length Qualification

☐ Fixed Length

☒ Max / Min Length

Max Length: 127

Min Length: 4

OK Cancel

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.

Asterisks(*) as data characters

Check the check box to take asterisks as part of the data.

Quiet Zone Check

Decide whether to check quiet zones of the target barcode. This function is enabled by default.

Security Level

Security Level renders more decoding accuracy giving consideration to barcodes' print quality.

Select "High" or "Normal" to decide the security level for reading barcodes.

Start/Stop Security Level

Decide the security level of the start/stop characters for reading Code 39 barcodes.

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

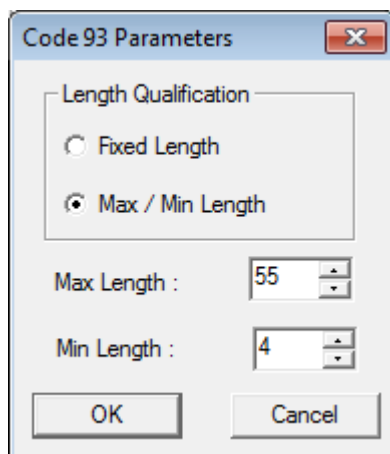
By default, the scanner is set to read Code 93 barcodes.

- ▶ 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".

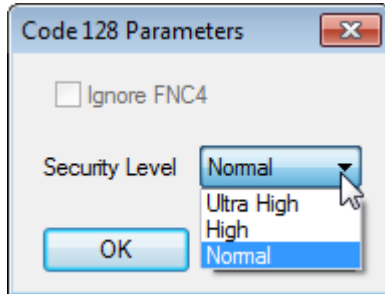
- ▶ For "Fixed Length", up to 2 fixed lengths can be specified.
- ▶ For "Max/Min Length", the maximum length and the minimum length must be specified. The scanner will only accept those barcodes with lengths that fall between max/min lengths specified.

3.7 Code 128

3.7.1 For 1D Scanners

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

- ▶ Advanced settings are provided as shown below.



Security Level

Security Level renders more decoding accuracy giving consideration to barcodes' print quality.

Select "High" or "Normal" (some models support the Ultra High option) to decide the security level for reading barcodes.

3.7.2 For 2D Scanners

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

- ▶ No advanced settings are available.

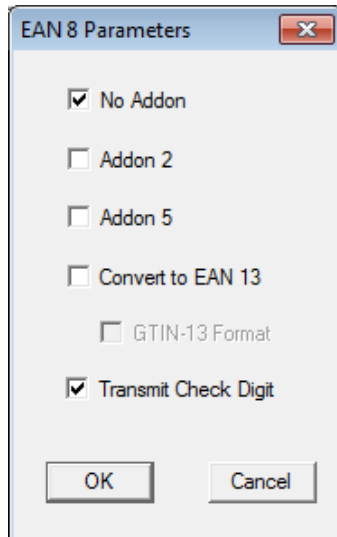
3.8 EAN-8

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.

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

- ▶ Select the GTIN-13 Format checkbox to expand the read EAN-8 barcode into EAN-13 in GTIN-13 format.

Transmit Check Digit

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

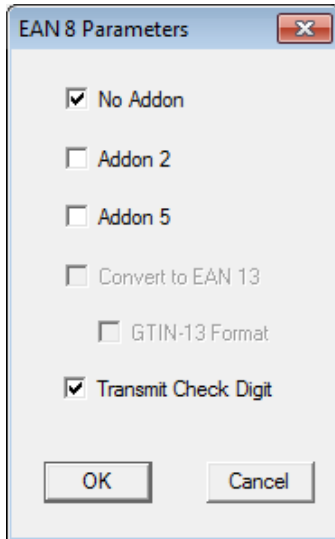
Cancel the check box if the check digit is not desired.

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

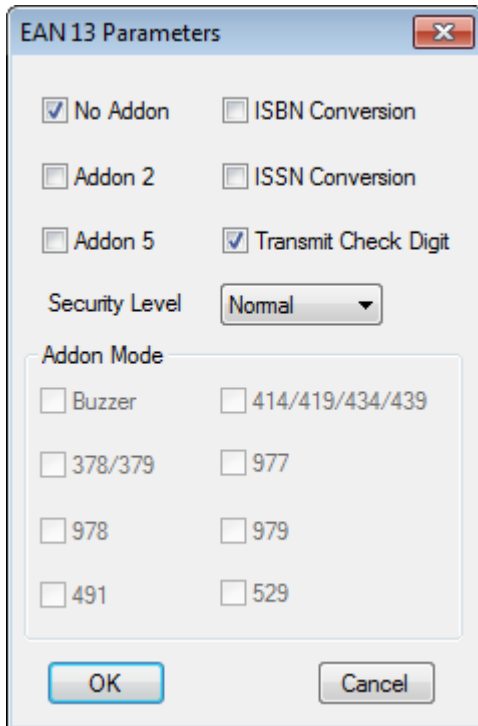
3.9 EAN-13

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.



The dialog box titled "EAN 13 Parameters" contains the following settings:

- ☒ No Addon
- ☐ ISBN Conversion
- ☐ Addon 2
- ☐ ISSN Conversion
- ☐ Addon 5
- ☒ Transmit Check Digit
- Security Level: Normal (dropdown menu)
- Addon Mode section:
 - ☐ Buzzer
 - ☐ 414/419/434/439
 - ☐ 378/379
 - ☐ 977
 - ☐ 978
 - ☐ 979
 - ☐ 491
 - ☐ 529

Buttons: OK, Cancel

EAN-13 Family

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

- ▶ 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 barcodes. High security results in slow reading speed. You will have to compromise between security and decoding speed.

Addon Mode

When the Addon 2 or Addon 5 is selected, checkboxes of the Addon Mode group are enabled.

- ▶ Buzzer: Have the scanner buzzer sound two beeps (with tones descending from high to low) when decoding the scanned barcode that doesn't have the Addon 2 or Addon 5 suffix,

The following checkboxes determine the scanned barcodes starting with the labeled number(s) won't be decoded if the barcodes do not have the Addon 2 or Addon 5 suffix.

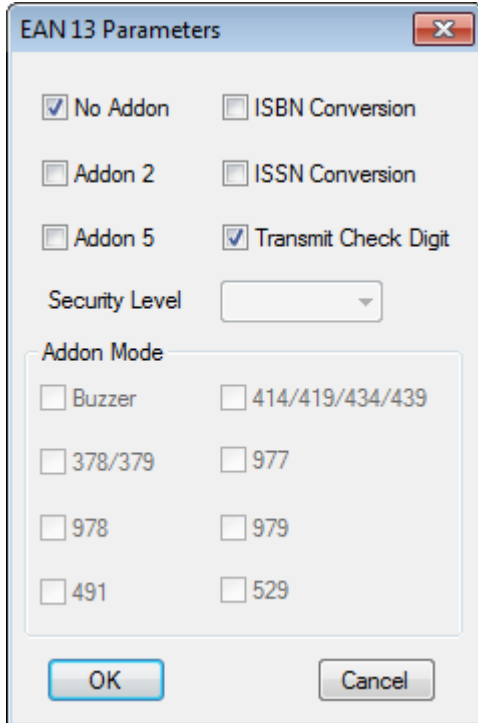
- ▶ 414/419/434/439
- ▶ 378/379
- ▶ 977
- ▶ 978
- ▶ 979
- ▶ 491
- ▶ 529

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.



The image shows a dialog box titled "EAN 13 Parameters" with a close button (X) in the top right corner. The dialog contains several settings:

- ☒ No Addon
- ☐ ISBN Conversion
- ☐ Addon 2
- ☐ ISSN Conversion
- ☐ Addon 5
- ☒ Transmit Check Digit
- Security Level:
- Addon Mode:
 - ☐ Buzzer
 - ☐ 414/419/434/439
 - ☐ 378/379
 - ☐ 977
 - ☐ 978
 - ☐ 979
 - ☐ 491
 - ☐ 529

At the bottom of the dialog are two buttons: "OK" and "Cancel".

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 barcodes. High security results in slow reading speed. You will have to compromise between security and decoding speed.

Addon Mode

When the Addon 2 or Addon 5 is selected, checkboxes of the Addon Mode group are enabled.

- ▶ Buzzer: Have the scanner buzzer sound two beeps (with tones descending from high to low) when decoding the scanned barcode that doesn't have the Addon 2 or Addon 5 suffix,

The following checkboxes determine the scanned barcodes starting with the labeled number(s) won't be decoded if the barcodes do not have the Addon 2 or Addon 5 suffix.

- ▶ 414/419/434/439
- ▶ 378/379
- ▶ 977
- ▶ 978
- ▶ 979
- ▶ 491
- ▶ 529

3.10 GS1-128 (EAN-128)

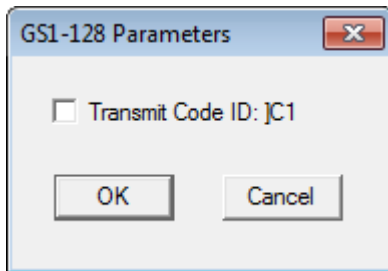
GS1-128 barcodes can be decoded only when this setting is enabled. However, for the following scanners with a specific firmware version, GS1-128 barcodes are taken as Code 128 when this setting is disabled.

- ▶ 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.



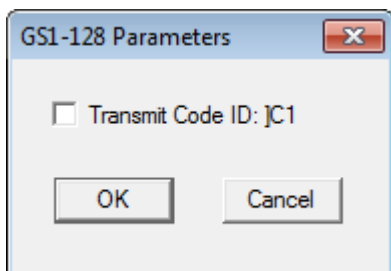
Transmit Code ID

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

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

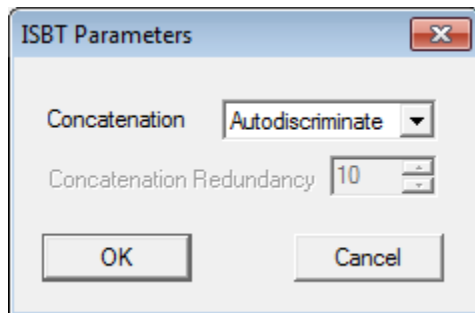
Decide whether to include the default Code ID ("]C1") in the data being transmitted.

3.11 ISBT 128

3.11.1 For 1D Scanners

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

For 1500/1500P/1502/1660/1661/1663 scanners, users can configure the concatenation settings.



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.

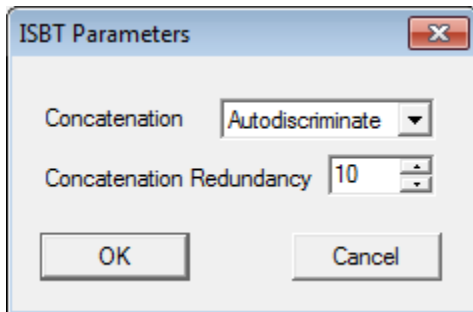
▶ Auto-discriminate ISBT Concatenation

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.

3.11.2 For 2D Scanners

By default, the scanner is set to read ISBT 128 barcodes. However, the ISBT symbology does not support the 1504SE model; a warning message dialog box will show up when users attempt to configure ISBT parameters for 1504/1504P(B)/1504SE.

- ▶ Advanced settings are provided as shown below.



Concatenation

Decide whether to decode and concatenates pairs of ISBT barcodes.

- ▶ Disable ISBT Concatenation (default for 1504P(B))
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.

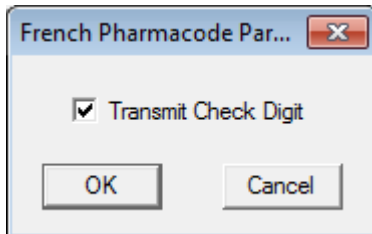
3.13 French Pharmacode

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.

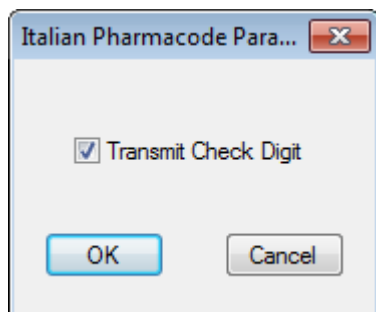
3.14 Italian Pharmacode

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.

3.14.2 For 2D Scanners

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

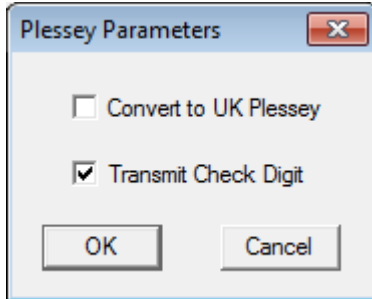
Note: Code 39 must be enabled first.

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 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

Security Level

Security Level renders more decoding accuracy giving consideration to barcodes' print quality. Select "High" or "Normal" to decide the security level for reading barcodes.

Code ID Selection

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

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

| |
|--|
| Transmit Code ID |
| The selected Code ID will be included in the data being transmitted. Cancel the check box if the Code ID is not desired. |
| Transmit Application ID |
| The Application ID will be included in the data being transmitted. Cancel the check box if the Application ID is not desired. |
| Transmit Check Digit |
| The check digit will be included in the data being transmitted. Cancel the check box if the check digit is not desired. |

3.16.2 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

Security Level

Security Level renders more decoding accuracy giving consideration to barcodes' print quality. Select "High" or "Normal" to decide the security level for reading barcodes.

Code ID Selection

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

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

Transmit Code ID

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

Transmit Application ID

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

Transmit Check Digit

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

Convert to UPC/EAN

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

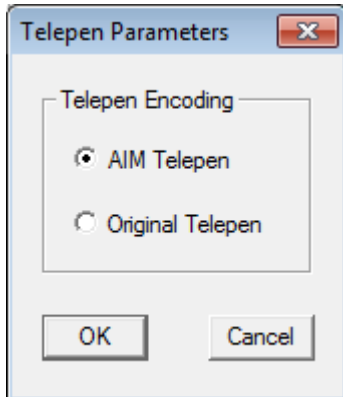
- ▶ Convert to EAN-13: It will strip the leading "010" from barcodes.
"01" is the Application ID and must be followed by a single zero (the first digit encoded).
- ▶ Convert to UPC-A: It will strip the leading "0100" from barcodes.
"01" is the Application ID and must be followed by two or more zeros (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.

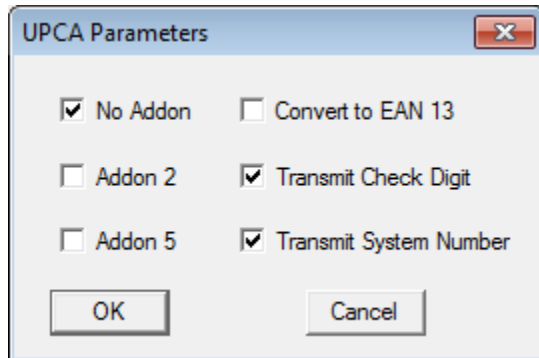
3.18 UPC-A

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.

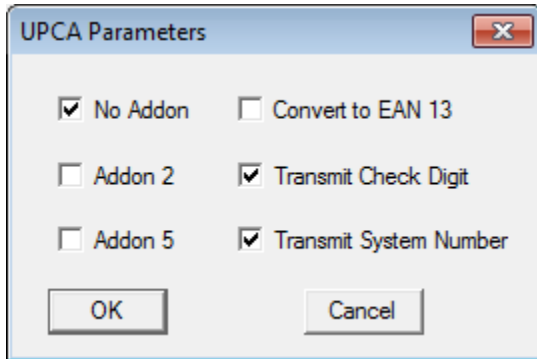
Cancel the check box if the system number is not desired.

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

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.

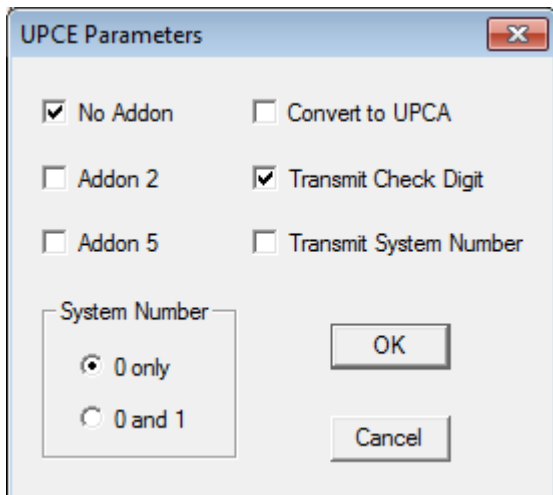
3.19 UPC-E

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.

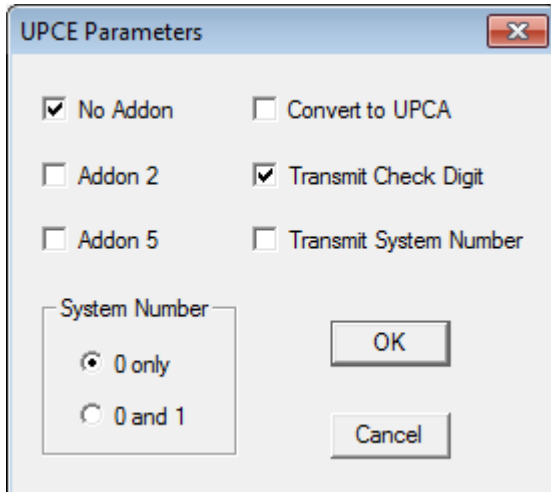
Cancel the check box if the check digit is not desired.

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

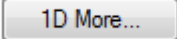
Decide whether to include the system number in the data being transmitted.

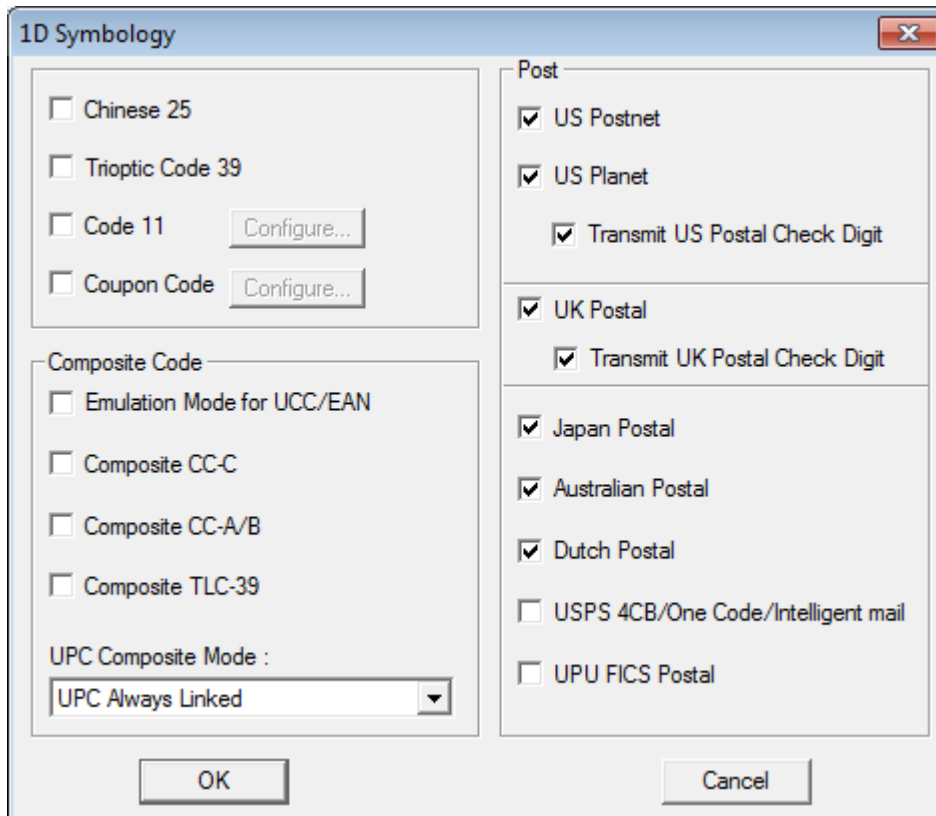
Transmit Check Digit

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

Click the  button to bring up the 1D Symbology dialog.



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.

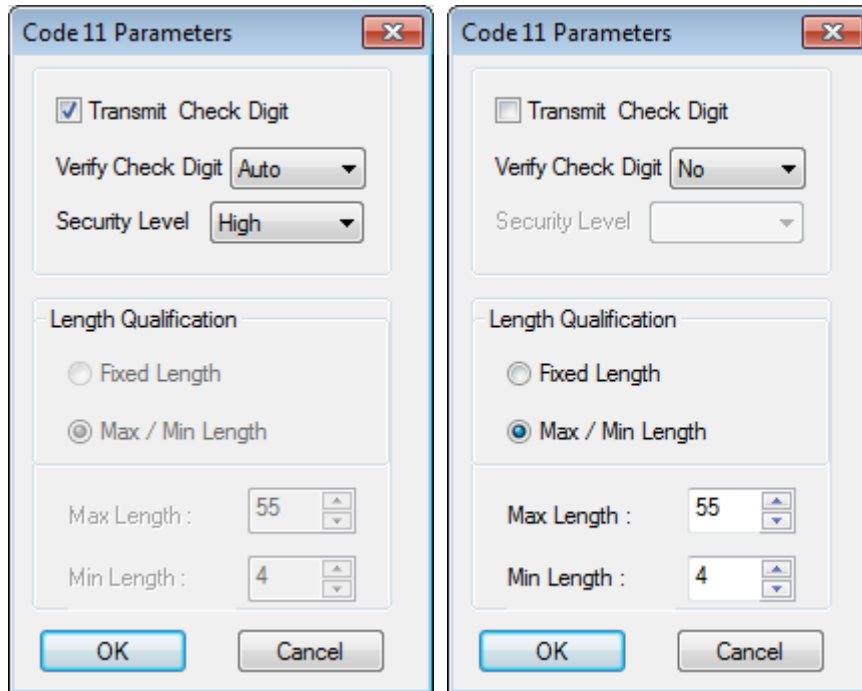
- ▶ Trioptic Code 39 is a variant of Code 39 used in the marking of computer tap cartridges. It always contains six characters.

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 (depending on models) are provided as shown below.



Transmit Check Digit

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

Verify Check Digit

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

Security Level

Security level renders more decoding accuracy giving consideration to barcodes' print quality. Decided the security level for reading Code 11 barcodes.

Length Qualification

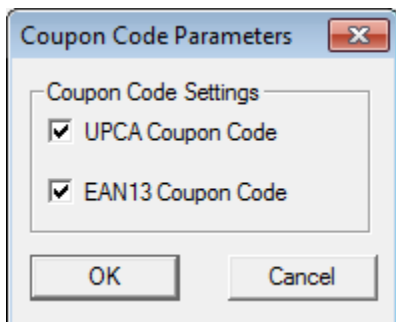
To prevent the "short scan" error, configure the "Length Qualification" settings to ensure that the correct barcode is read by qualifying the allowable code length. The barcode can be qualified by "Fixed Length" or "Max/Min Length".

- ▶ 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:

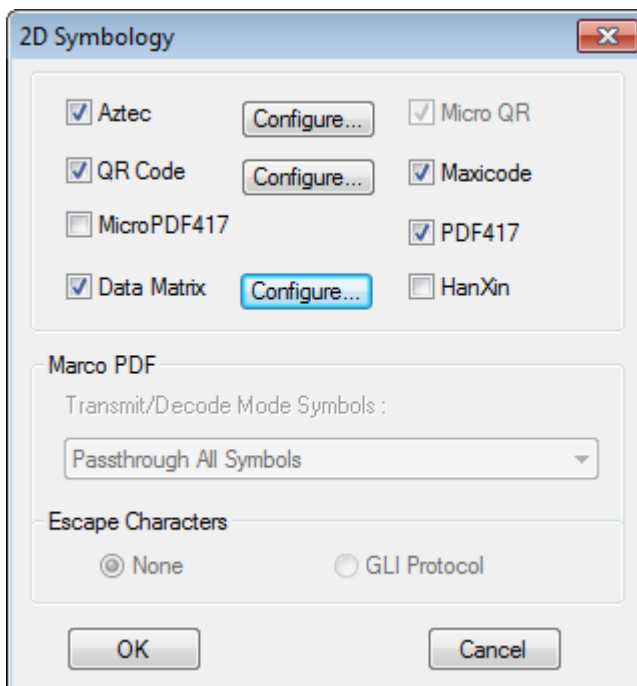
- ▶ USPS 4CB/One Code/Intelligent Mail
- ▶ UPU FICS Postal

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

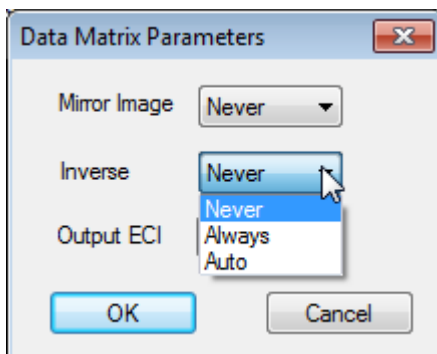
3.21 2D Symbologies (2D Models)

The scanner is set to read the following 2D symbologies depending on models:

- ▶ Aztec
- ▶ QR Code
- ▶ MicroPDF417
- ▶ Data Matrix
- ▶ MicroQR
- ▶ Maxicode
- ▶ PDF417
- ▶ Han Xin
- ▶ Macro PDF



Click the Configure button of a particular 2D symbology to bring up a dialog box to configure Mirror Image and Inverse settings.



Mirror Image

Decide whether to decode mirror image barcodes.

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

Inverse

Decide whether to decode inverse barcodes.

- ▶ Never — do not decode inverse barcodes.
- ▶ Always — decode only inverse barcodes.
- ▶ Auto — decode both inverse and normal barcodes.

Output ECI (Data Matrix only)

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

- ▶ Disable — do not show the embedded ECI information.
- ▶ Enable — show the embedded ECI information.

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 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 All Symbols 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 to 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!

3.22 GS1 Formatting

Users can decide whether to enable GS1 formatting for symbologies of GS1-128, GS1 DataBar Family, Composite CC-A/B, Composite CC-C etc. depending on the model of product. Besides, application ID marks and field separator can be defined to label the GS1 data.

Applicable Code Type

Tick the checkbox to enable GS1 formatting for the particular code type. The applicable code type varies depending on the scanner model you have.

Data Editing

- ▶ **Application ID Mark** — You may want to add the application ID mark to the left or right of an application ID for the purpose of labeling it when formatting the GS1 data. Click the text field to bring up the Grid Control dialog and then click the characters listed in the table to specify the desired character. If you intend to add the mark only to the right of the application ID, click '00' first and then click the second character as the application ID mark.
- ▶ **Field Separator** — Click the text field to bring up the Grid Control dialog and then click the characters listed in the table to specify the desired separator character.

Defining Output Format

You may configure the format in which 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]

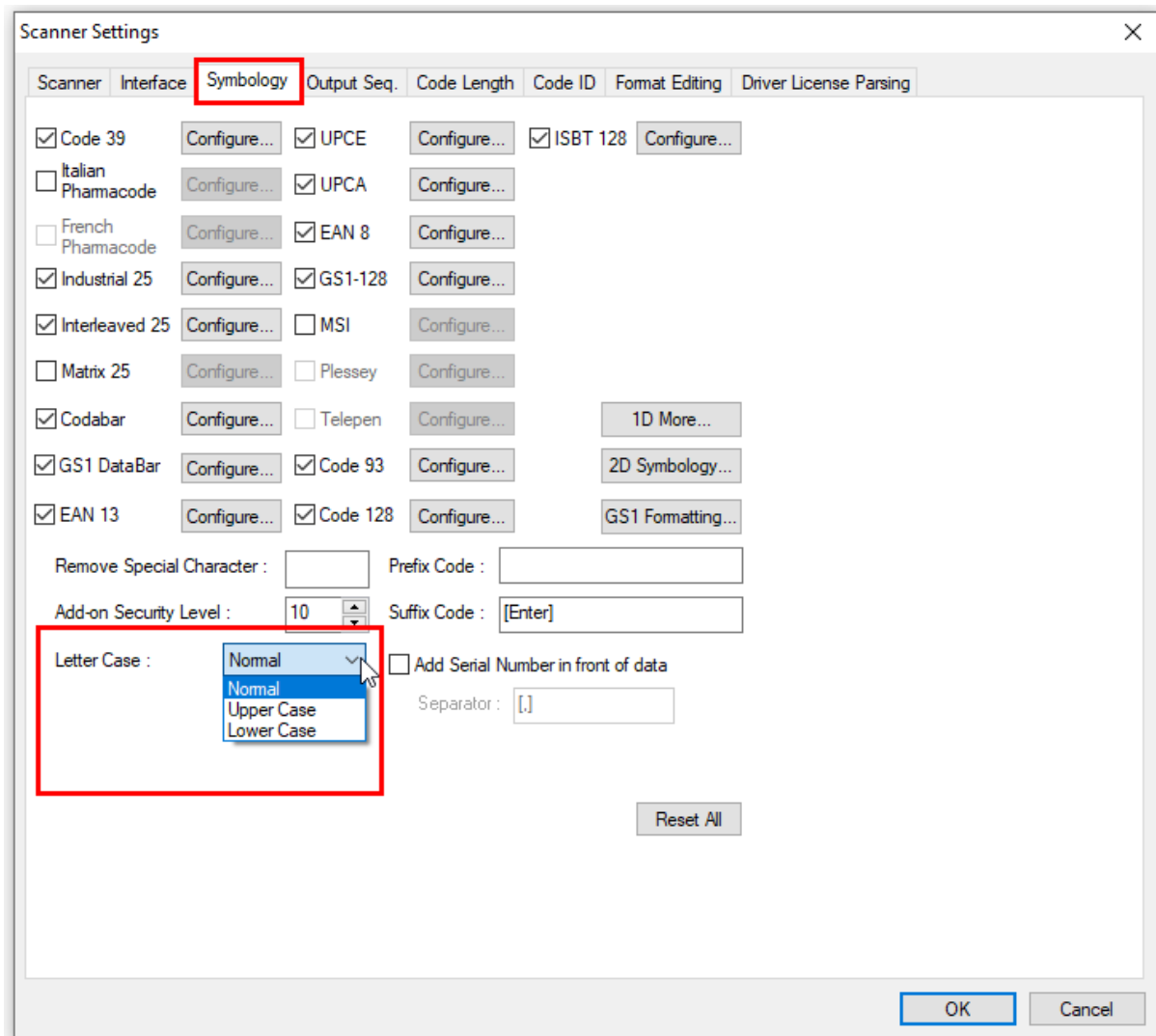
Refer to [How to Configure the Scanner](#) for the flow chart of data process.

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4.1 Letter Case

Click the Symbology tab. 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, click the drop-down menu to select [Upper Case] to output data in upper case only; otherwise, select [Lower Case] to output data in lower case only.



4.2 Substitution

Click the **Format Editing** tab to proceed with string/character substitution. Wherever a user-specified target string (up to 16 characters) or a single character comes up in a collected data, the scanner can replace it with another string or characters.

The screenshot shows the 'Scanner Settings' dialog box with the 'Format Editing' tab selected. The dialog has several tabs: Scanner, Interface, Symbology, Output Seq., Code Length, Code ID, Format Editing (highlighted with a red box), and Driver License Parsing. The 'Format Editing' tab contains two main sections: 'Substitution' and 'Data Editing'.

Substitution Section:

- String Substitution (16 to 16):** This section contains three pairs of input fields for 'String 1', 'String 2', and 'String 3'. Each pair consists of a 'Search:' field and a 'Replace:' field.
- Character Substitution (1 to 2):** This section contains three pairs of input fields for 'Char 1', 'Char 2', and 'Char 3'. Each pair consists of a 'Search:' field and a 'Replace:' field.

Data Editing Section:

- Exclusive:** A checkbox.
- Enable Format 1 through 5:** Five checkboxes, each followed by a 'Configure...' button.
- Date & Time Stamp:** Three radio buttons: 'No Time Stamp', 'Add to front of data', and 'Append to end of data' (which is selected). A 'More...' button is next to the 'Append to end of data' option.

Other Elements:

- Applicable Code Types:** A button located below the character substitution fields.
- Reset:** A button located at the bottom left of the dialog.
- OK and Cancel:** Buttons located at the bottom right of the dialog.

Note: The substitution is performed only on the collected data before the data goes through editing formats. Therefore the substitution is not applicable to the Prefix/Suffix Code, Code ID, Length Code, or any Additional Field.

4.2.1 String Substitution

You can define up to three sets (String 1 ~ String 3) of string substitution. Click the Search field to bring up the Grid Control dialog (see [Appendix I Grid Control](#)) and then specify up to 16 characters as the target string. Next click the Replace field to specify up to 16 characters as the replacement string.

The screenshot shows a dialog box titled "Substitution". Inside, there is a section labeled "String Substitution (16 to 16)". It contains three sets of input fields for String 1, String 2, and String 3. For String 1, the Search field contains "[1][2][3][a][b][c]" and the Replace field contains "[0][0][0]". The Search and Replace fields for String 2 and String 3 are empty.

The picture above illustrates that the scanner will search for "123abc" in the collected data. When the string of "123abc" is found in the collected data, "000" will substitute for "123abc".

4.2.2 Character Substitution

You can define up to three sets (Char. 1 ~ Char. 3) of character substitution. Click the Search field to bring up the Grid Control dialog to specify a single character to be searched for. Next click the Replace field to specify up to 2 characters as the replacement character(s).

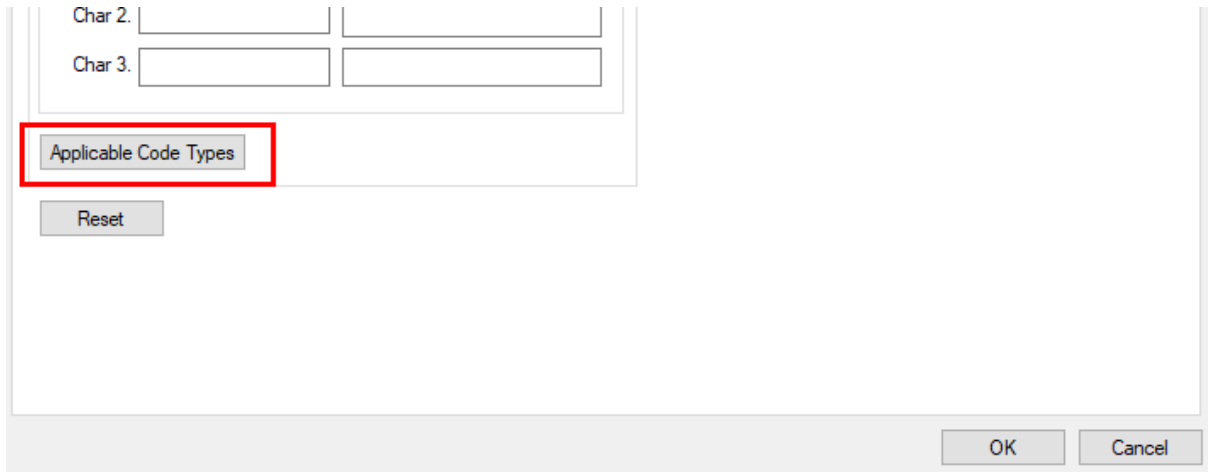
The screenshot shows a dialog box titled "Character Substitution (1 to 2)". It contains three sets of input fields for Char 1, Char 2, and Char 3. For Char 1, the Search field contains "[Space]" and the Replace field contains "[*][*]". The Search and Replace fields for Char 2 and Char 3 are empty.

The picture above illustrates that the scanner will search for any space character in the collected data. When a space character is found, "***" will substitute for it.

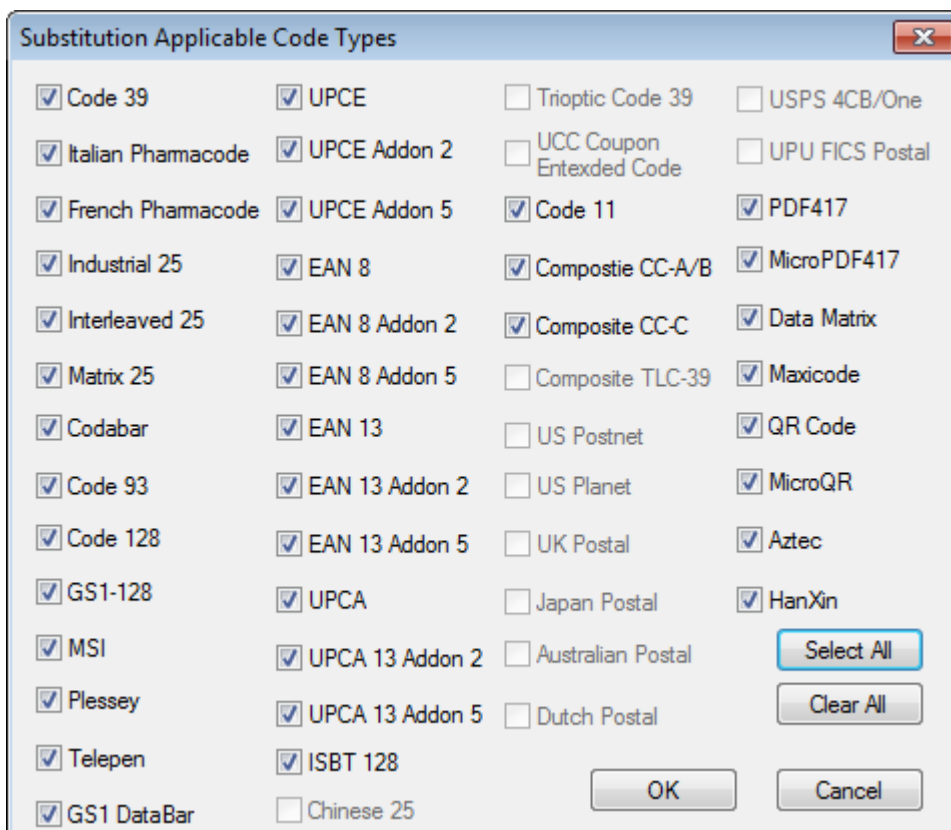
If you don't specify any character in the Replace field, the searched character will be deleted from the collected data.

4.2.3 Applicable Code Types

By default, character substitution will be performed on all symbologies. Click this button to bring up the dialog.



Click the check boxes respectively to determine whether the substitution rules apply to a particular symbology.



4.3 Prefix/Suffix Code

Click the Prefix Code or Suffix Code field on the **Symbology** tab so that you can choose characters from the pop-up Grid Control window.

- ▶ 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 chosen 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 | <ul style="list-style-type: none">▶ Add Shift▶ Add Left Ctrl▶ Add Left Alt▶ Add Right Ctrl▶ Add Right Alt Refer to Appendix I Grid Control . |

4.4 Serial Number Stamp & Identity Code

Scanner Settings

Scanner Interface Symbology Output Seq. Code Length Code ID Format Editing

☒ Code 39
☒ UPCE
☒ ISBT 128

☐ Italian Pharmacode
☒ UPCA

☐ French Pharmacode
☒ EAN 8

☒ Industrial 25
☒ GS1-128

☒ Interleaved 25
☐ MSI

☐ Matrix 25
☐ Plessey

☒ Codabar
☐ Telepen

☒ GS1 DataBar
☒ Code 93

☒ EAN 13
☒ Code 128

Remove Special Character :
 Prefix Code :

Add-on Security Level :
 Suffix Code :

Letter Case :
☒ Add Serial Number in front of data

Identity Code :
 Separator :

4.4.1 Serial Number Stamp

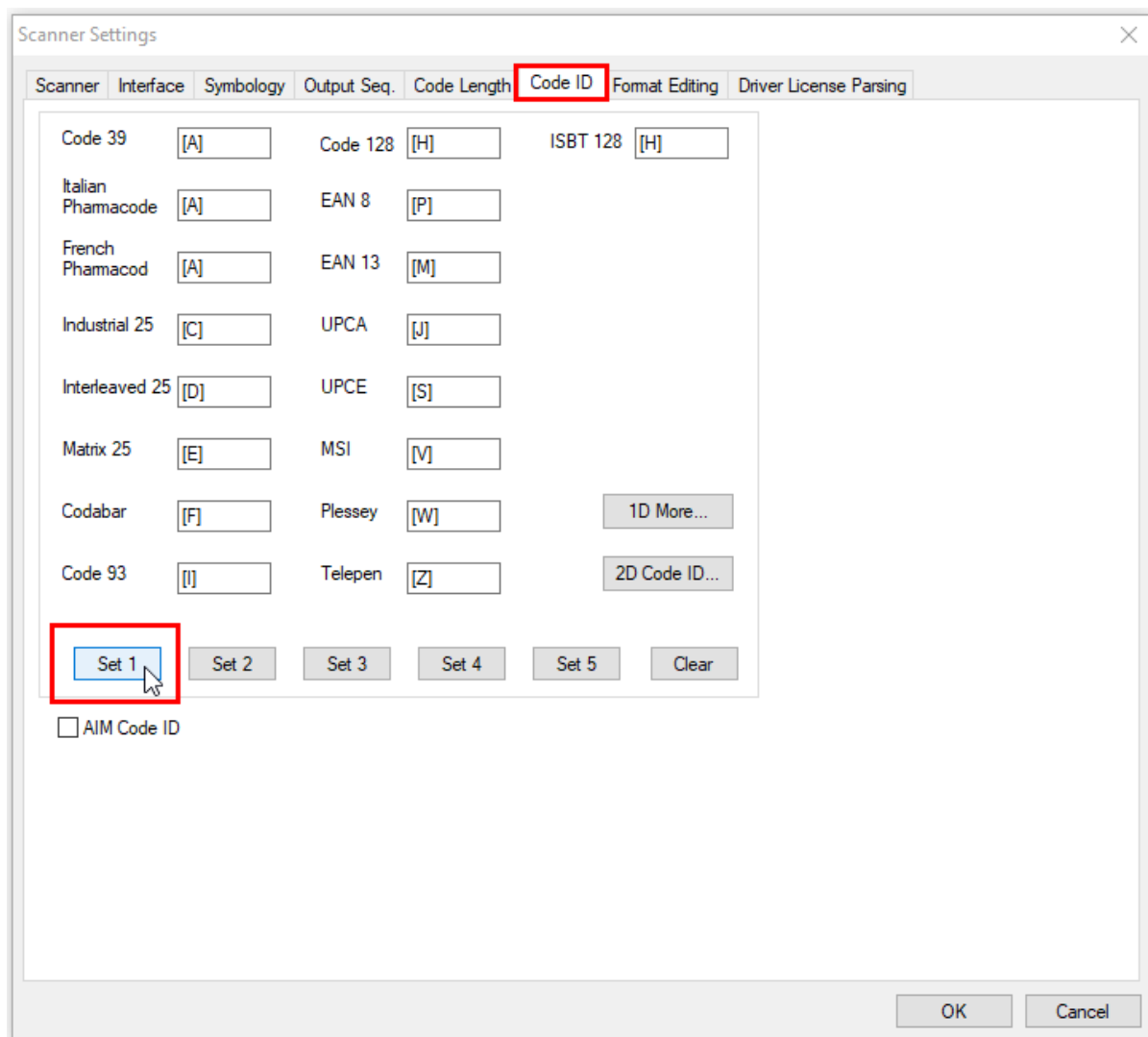
Decide whether to add the device serial number in front of the data transmitted. When the checkbox is selected, the Separator text field will then be available with a comma character meaning that a comma will be inserted between the added serial number stamp and the accompanying data. Click the text field to bring up the Grid Control dialog and select a desired separator character instead.

4.4.2 Identity Code (1663 Only)

For the SmartRead data uploading utility, a column field named "Identity Code" whose value is obtained from the scanner is designed for users to identify scanners. Users can give an identity code to the scanner by typing up to 32 alphanumeric characters in this text field.

4.5 Code ID

To make the Code ID configuration easier, click one of the five buttons to load the pre-defined Code ID set 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.

4.5.1 Code ID Set 1~5

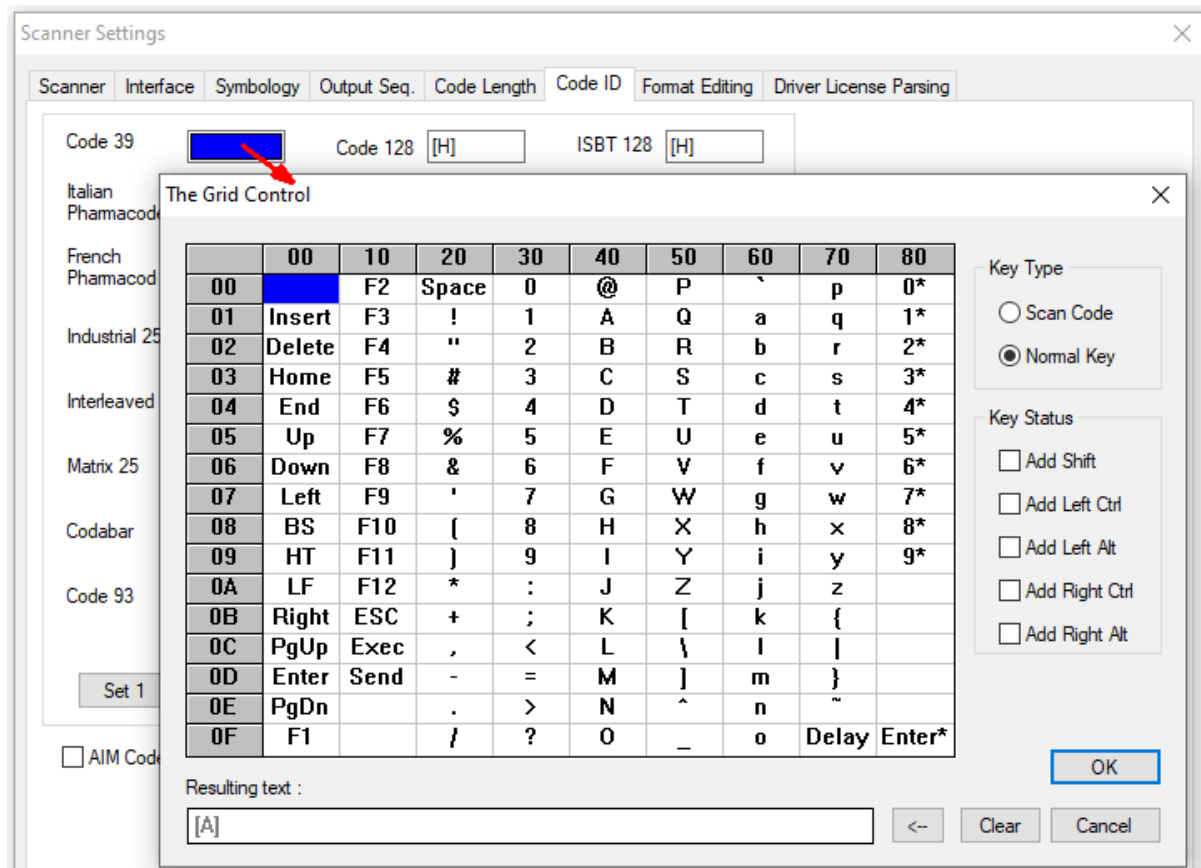
The pre-defined code ID sets are listed in the table below. Click the [1D More...] or [2D Code ID...] button for more symbologies.

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

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

4.5.2 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 set as 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.

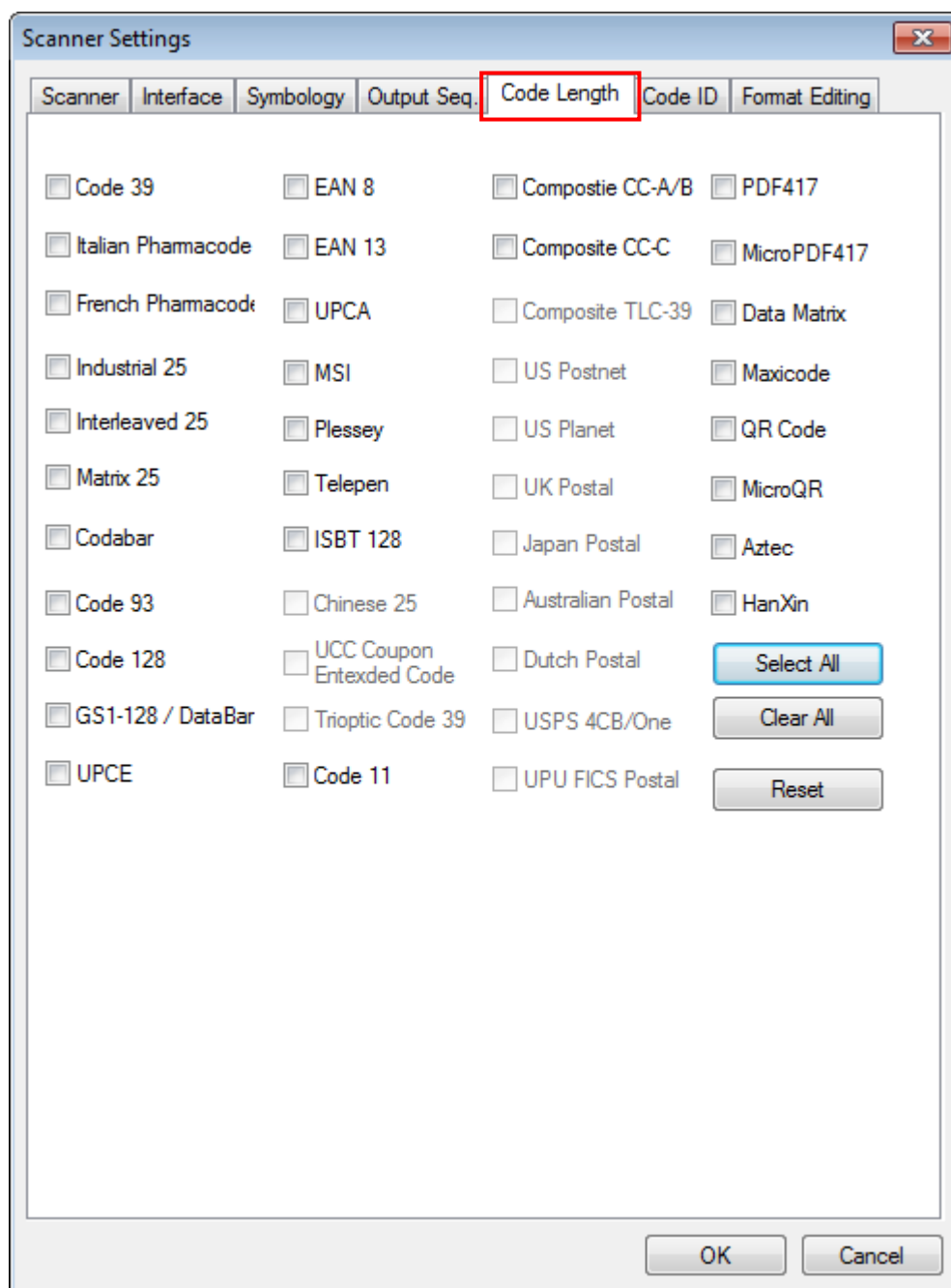
| Key Type | Key Status |
|----------------------------|--|
| Scan Code | N/A |
| Normal Key | <ul style="list-style-type: none"> ▶ Add Shift ▶ Add Left Ctrl ▶ Add Left Alt ▶ Add Right Ctrl ▶ Add Right Alt Refer to Appendix I Grid Control . |

4.5.3 AIM Code ID

For certain scanners, you can add an AIM (Automatic Identification and Mobility) code ID in front of the barcode to share the common purpose of identifying, tracking, recording, storing and communicating essential business, personal or product data. Enabling this function can provide you with a fast and accurate collection and entry of data.

4.6 Code Length

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



4.7 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 scanning mode.

General Scanners

For most of the scanner models 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.

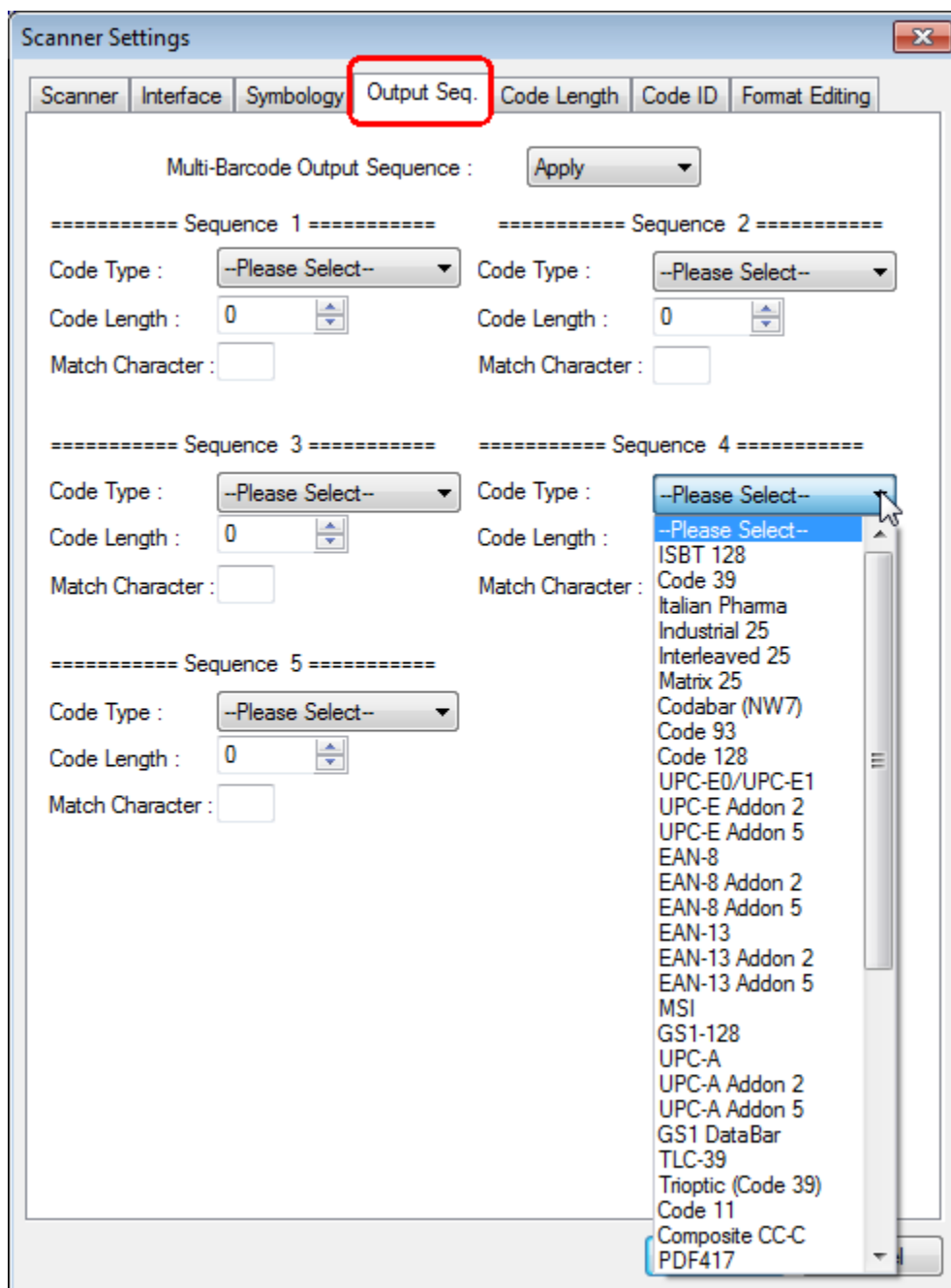
1704

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.

4.8 Remove Special Character

You can only specify 1 character, but it will remove matching character(s) 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. Note that if the specified character can't be located in the starting position, the data will be kept unchanged.

| Original data | Specified character(s) to be removed | Data with specified character(s) removed |
|---------------|--------------------------------------|--|
| 012345 | 0 | 12345 |
| 00012345 | 0 | 12345 |
| 010333 | 0 | 10333 |
| 100330 | 0 | 100330 (unchanged) |

The screenshot shows the 'Scanner Settings' dialog box with the 'Symbology' tab selected. The 'Remove Special Character' field is highlighted with a red box. The dialog includes various barcode format options and configuration buttons.

| Scanner | Interface | Symbology | Output Seq. | Code Length | Code ID | Format Editing |
|--|---|---|--|------------------------------------|---|---|
| <input checked="" type="checkbox"/> Code 39 | <input type="checkbox"/> Italian Pharmacode | <input checked="" type="checkbox"/> Industrial 25 | <input checked="" type="checkbox"/> Interleaved 25 | <input type="checkbox"/> Matrix 25 | <input checked="" type="checkbox"/> Codabar | <input type="checkbox"/> GS1 DataBar |
| <input type="checkbox"/> UPCA | <input checked="" type="checkbox"/> EAN 8 | <input checked="" type="checkbox"/> GS1-128 | <input type="checkbox"/> MSI | <input type="checkbox"/> Plessey | <input type="checkbox"/> Telepen | <input checked="" type="checkbox"/> Code 93 |
| <input checked="" type="checkbox"/> ISBT 128 | <input type="checkbox"/> UPCA | <input type="checkbox"/> EAN 8 | <input type="checkbox"/> GS1-128 | <input type="checkbox"/> MSI | <input type="checkbox"/> Plessey | <input type="checkbox"/> Telepen |
| <input type="checkbox"/> Code 93 | <input type="checkbox"/> Code 128 | <input type="checkbox"/> Code 128 | <input type="checkbox"/> Code 128 | <input type="checkbox"/> Code 128 | <input type="checkbox"/> Code 128 | <input type="checkbox"/> Code 128 |

Remove Special Character : Prefix Code :

Add-on Security Level : Suffix Code :

Letter Case :

Reset All

OK Cancel

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 compose the data actually sent to the host computer.

- ▶ Up to five different formats can be specified.

General Scanners

For most of the scanner models 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.

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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.

The screenshot shows the "Scanner Settings" dialog box with the "Format Editing" tab selected. The "Format Editing" tab is highlighted with a red box. Inside this tab, the "Data Editing" section is also highlighted with a red box. The "Data Editing" section contains the following options:

- ☐ Exclusive
- ☐ Enable Format 1 Configure...
- ☐ Enable Format 2 Configure...
- ☐ Enable Format 3 Configure...
- ☐ Enable Format 4 Configure...
- ☐ Enable Format 5 Configure...

Other visible sections in the dialog include:

- Substitution**
 - String Substitution (16 to 16)**
 - String 1. Search: Replace:
 - String 2. Search: Replace:
 - String 3. Search: Replace:
 - Character Substitution (1 to 2)**
 - Search: Replace:
 - Char 1.
 - Char 2.
 - Char 3.
- Applicable Code Types** (button)
- Reset** (button)

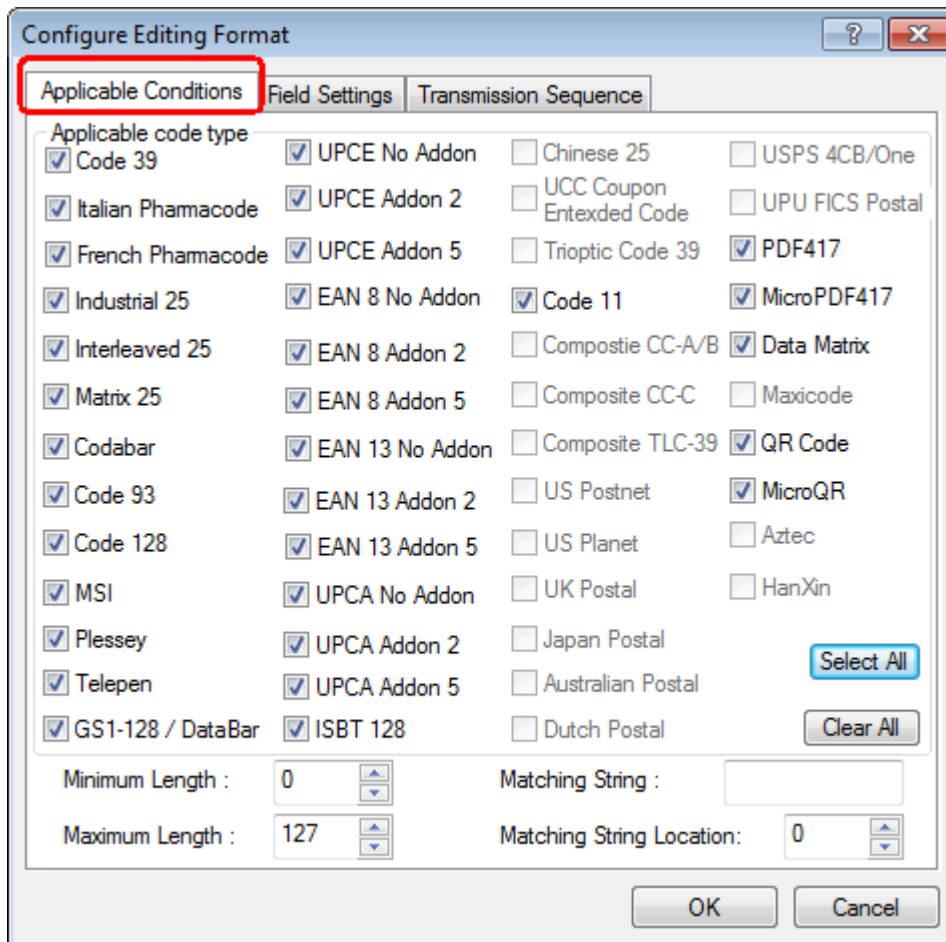
At the bottom of the dialog are **OK** and **Cancel** buttons.

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.

- Uncheck 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 Minimum/Maximum length (character count) ranging from 0 to 254 (1D scanners) or 0 to 32767 (2D scanners) are eligible for data editing.

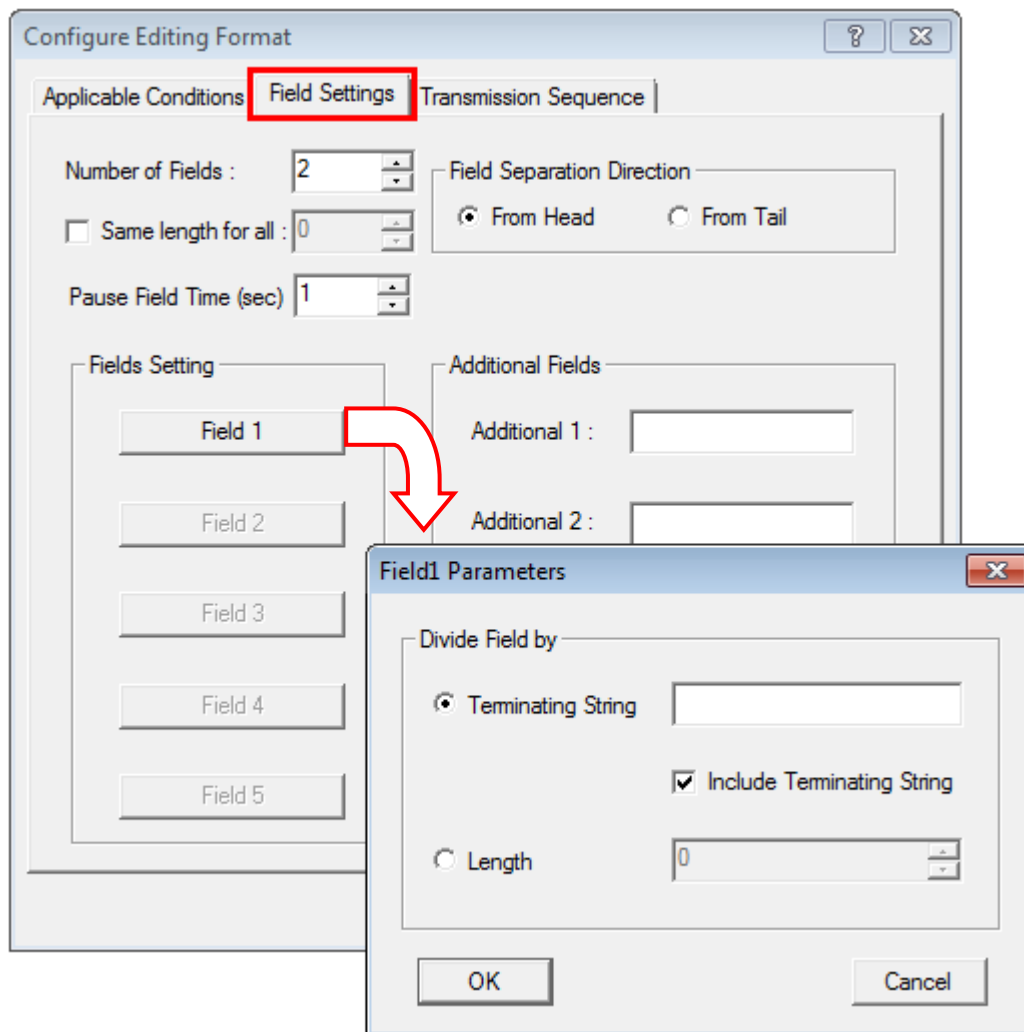
- ▶ Enter a value from 0 to 254 (1D scanners) or 0 to 32767 (2D scanners).
- ▶ When zero is given to both, the scanner will not perform the length qualification.

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

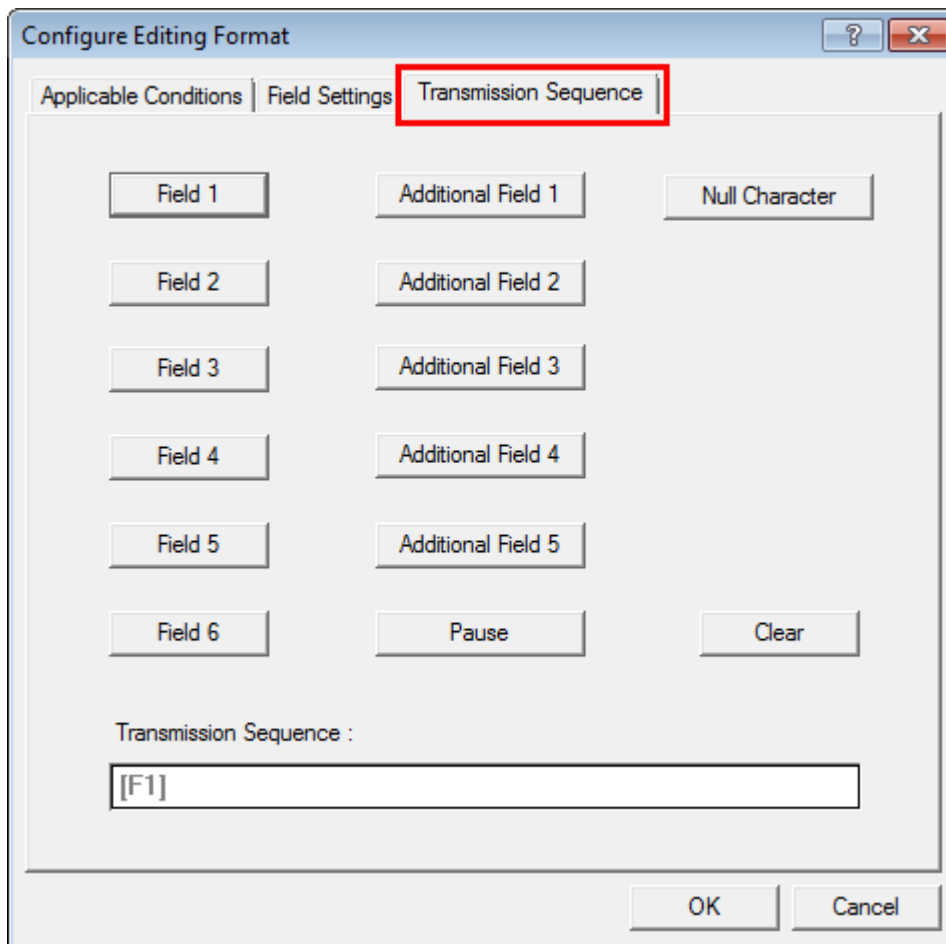
Up to five additional fields can be created for each editing format; each of them is numbered from A1 to A5 accordingly. To configure the Additional Fields setting, click the associated field and choose up to four characters from the pop-up window of Grid Control. Refer to [Appendix I Grid Control](#).

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

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

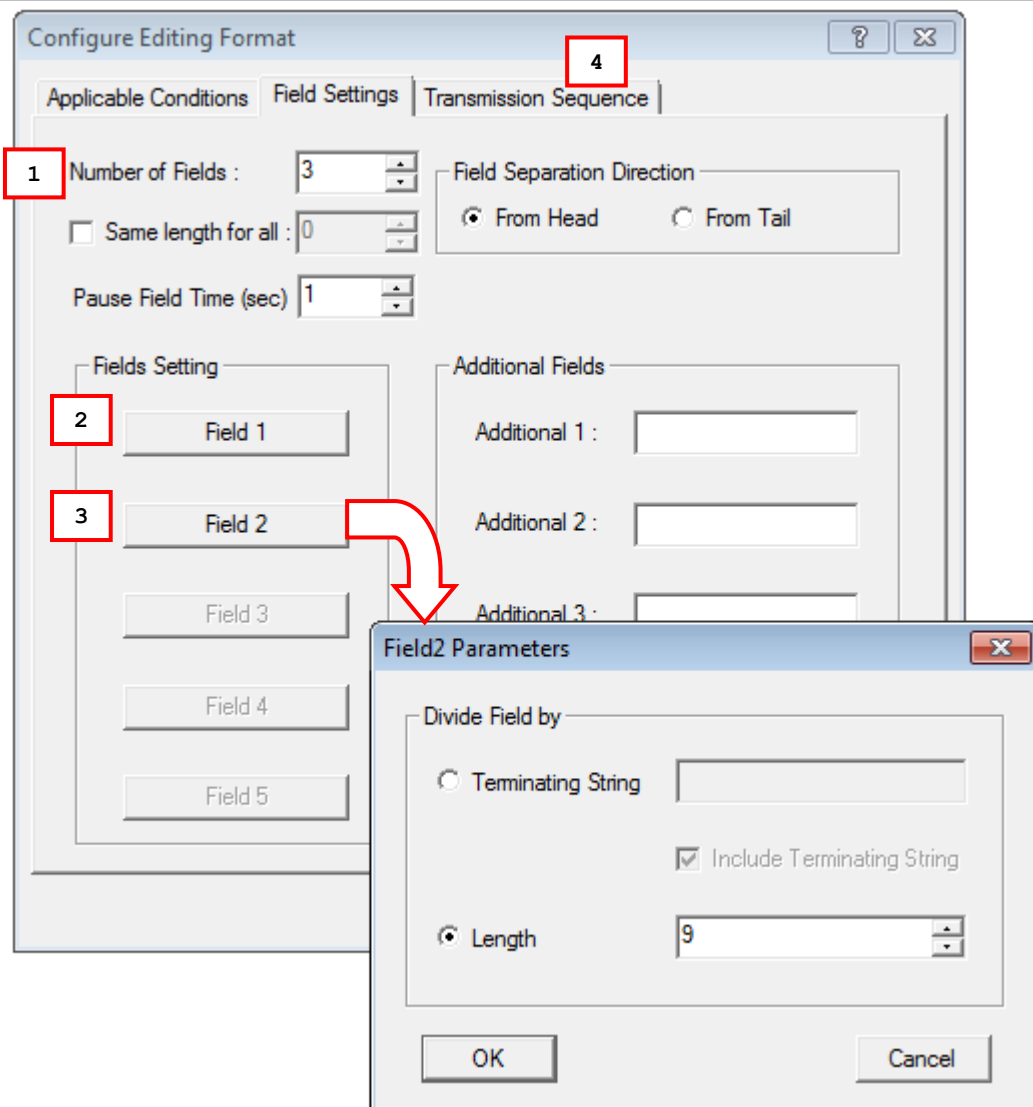


5.2.4 Examples

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

The editing format should be configured as follows:

1. Set Number of Fields to "3".
2. Set Field1 Parameters: divide field by Length, and set length to "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:

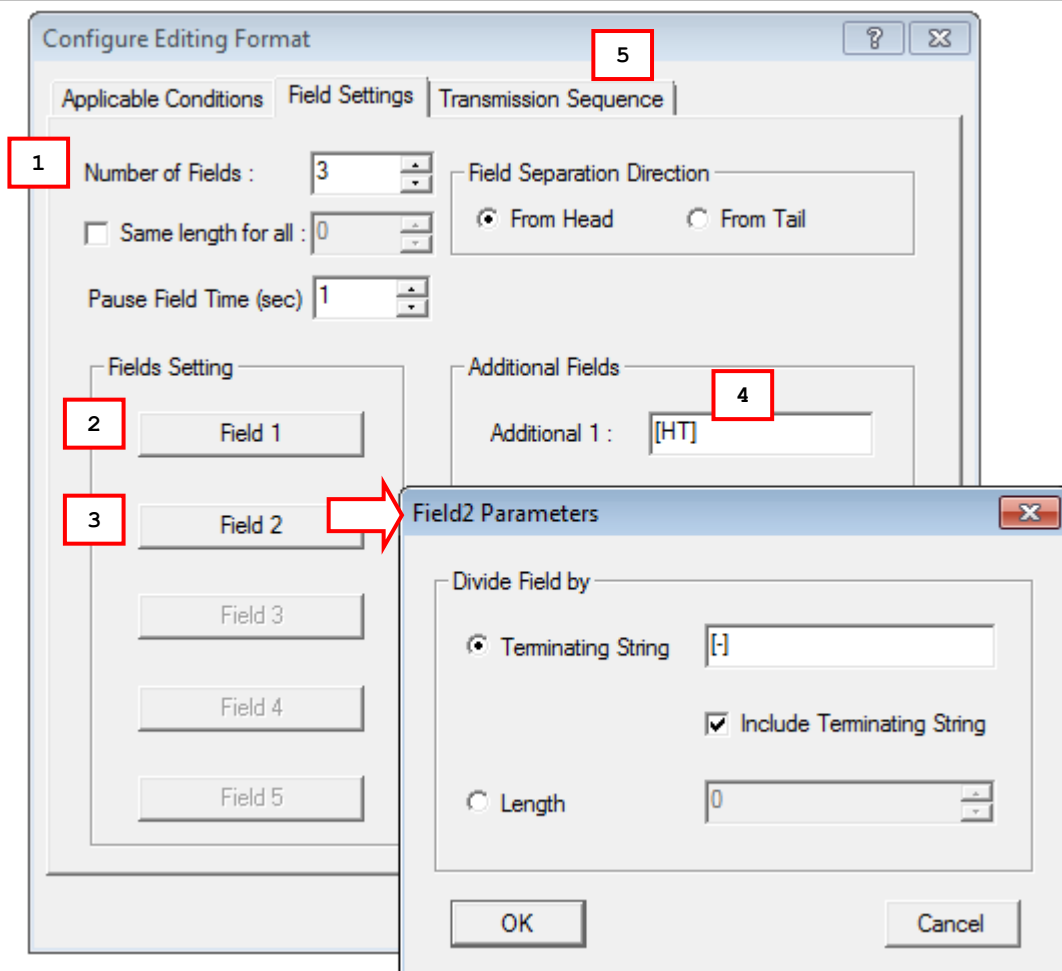
- From the 1st character to the 6th character is the date code.
- From the 7th character to the "-" character is the item number.
- After the "-" character is the quantity information.

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:

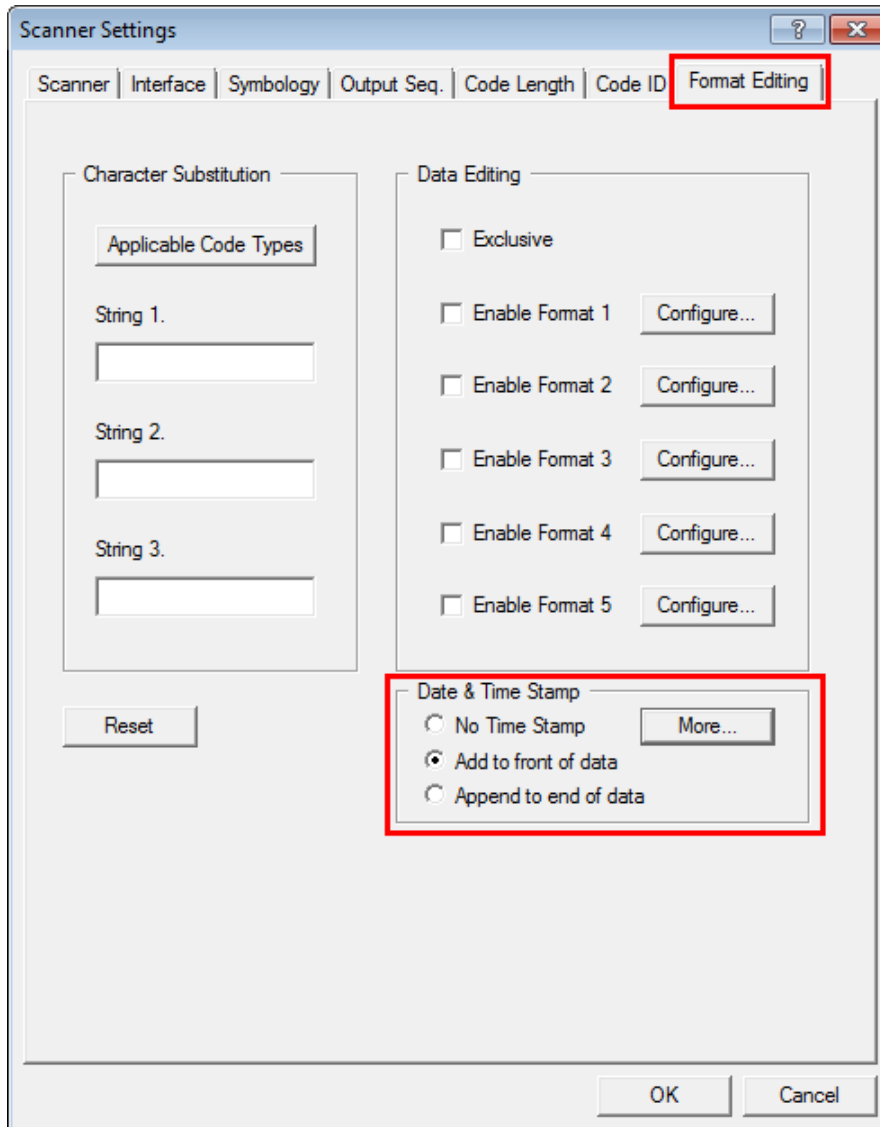
1. Set Number of Fields to "3".
2. Set Field1 Parameters: divide field by Length, and set length to "6".
Field1 = from the 1st character to the 6th character
3. Set Field2 Parameters: divide field by Terminating String, and set the string to "-".
Field2 = from the 7th character to the "-" character
4.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



5.3 Date & Time Stamp (1662/1663/1664)

For your better analysis of the data collected, the 1662/1663/1664 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.

5.3.1 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. |

5.3.2 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.

Date & Time Stamp Settings

☒ Separate DATE stamp and TIME stamp to two fields.

Date Format: YYYY/MM/DD

☒ Year

☒ Month

☒ Day

☒ Separator

Date Style:

Time Format: HH:MM:SS

☒ Hour

☒ Minute

☒ Second

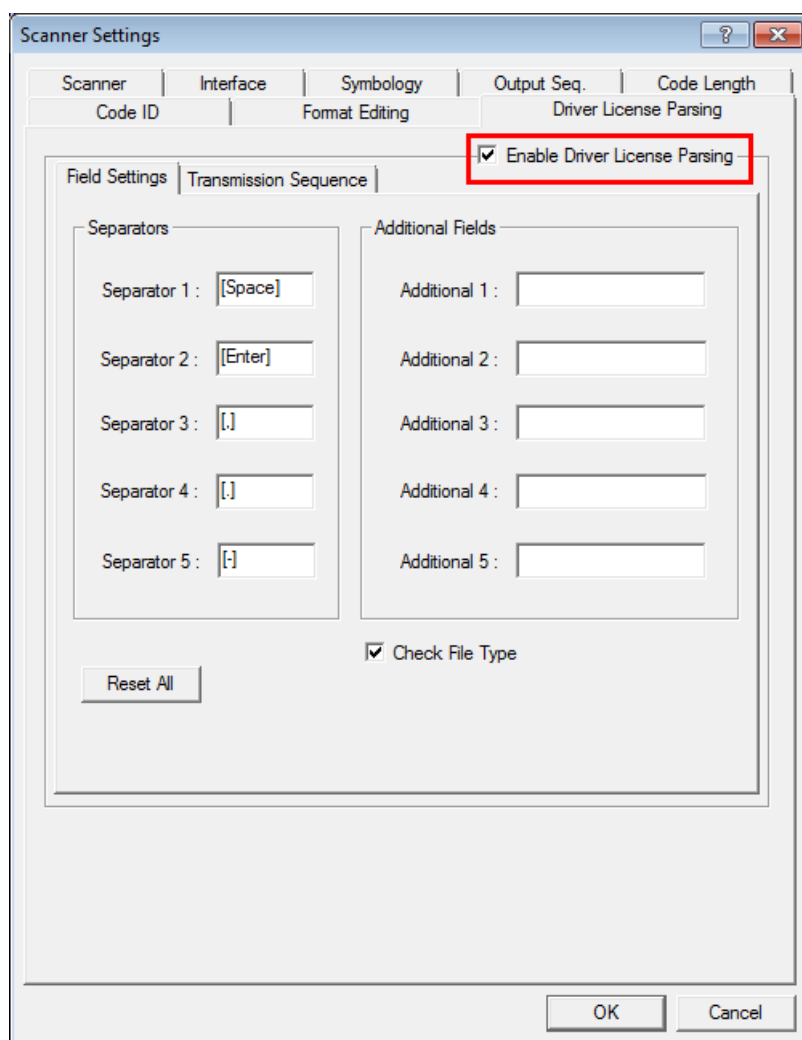
☒ Separator

OK

5.4 Driver License Parsing (1504A/1564A/1664)

For the capable of reading 2D driver's licenses and other American Association of Motor Vehicle Administrators (AAMVA) compliant ID cards. 2D symbology scanners support the 2D licensed card scan. These scanners can decode the information embedded in the ID cards to a formatted data. Combine with ScanMaster utility, it also supports user an arranged and easy-to-use interface.

On the Driver License Parsing tabbed page, after finishing all related configurations, you have to select the "Enable Driver License Parsing" check box to active Driver License Parsing function on your 2D scanners. Or click Reset All button to clear all configurations so that you can restore to the default values.

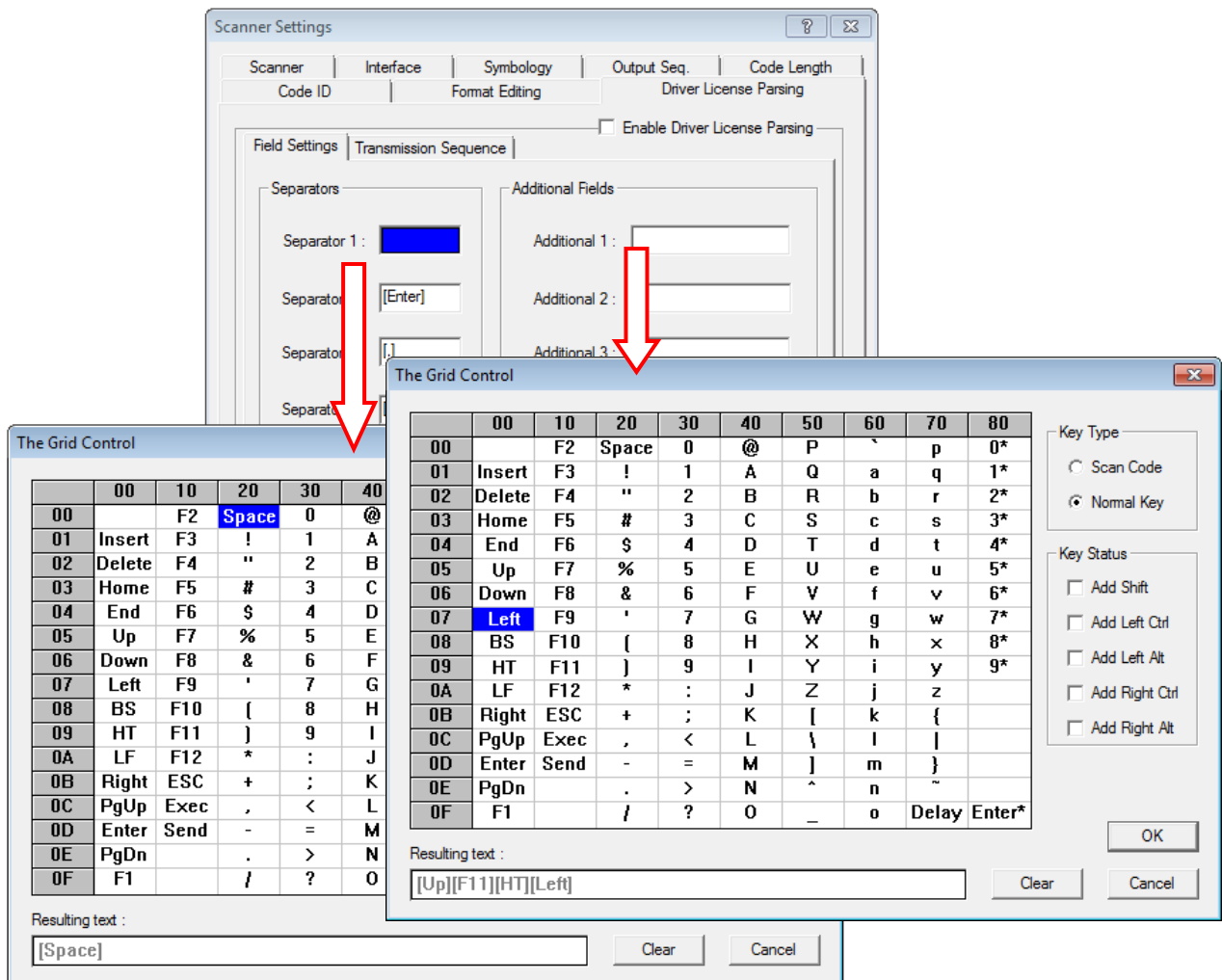


Note: The configured settings will be saved into the Flash memory and applied when using next time.

5.4.1 Field Settings

Before scanning a 2D driver license, you can define the separators to separate Fields during the transmission sequence of data scanning. In addition to the built-in data elements, you can also specify up to 5 Additional Fields with 4 bytes characters. Program the transmission sequence by reading the desired fields as additional fields.

Note: Up to 5 Separators and additional Fields can be assigned.



Separators

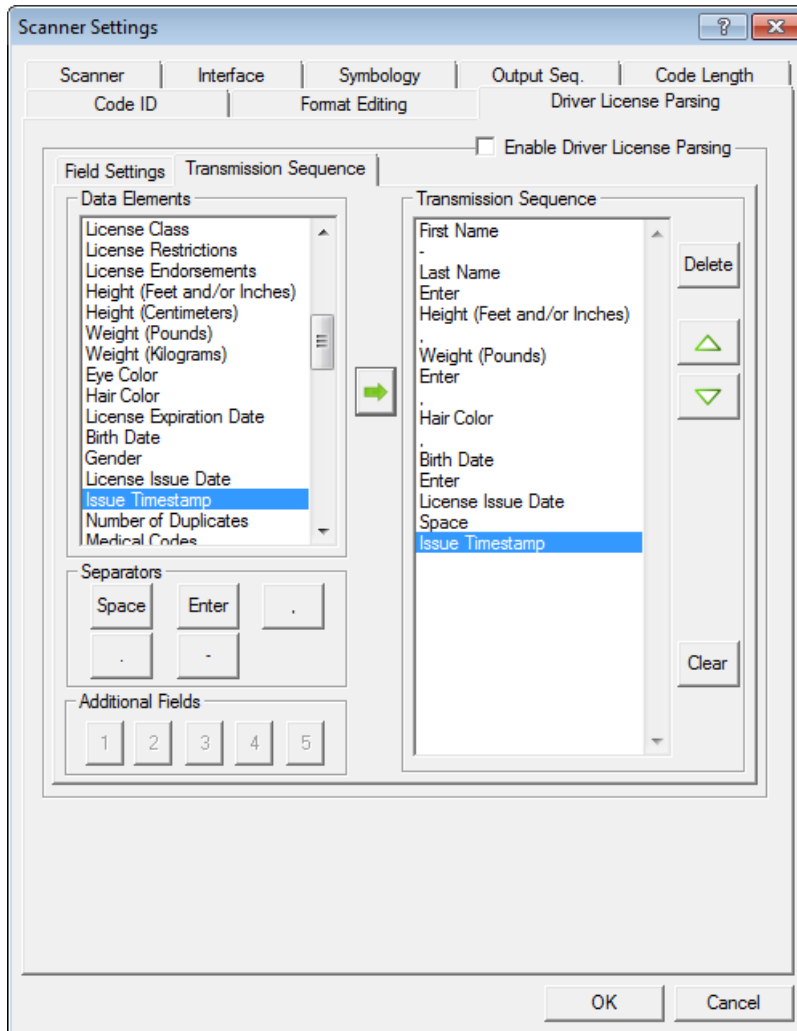
By default, the Separators are specified to [Space], [Enter], [,], [.] and [-]. Click the required separator field to pop-up [The Grid Control] dialog box to renew the separator. It allows only one Grid character can be defined for each separator field.

Additional Fields

By default, you can specify 5 additional fields for additional grids. Click the Additional Field directly to pop-up [The Grid Control] dialog box. It allows up to 4 Grid character can be defined for each additional field. Refer to Grid Control for more information.

5.4.2 Transmission Sequence







In the Driver License Parsing tabbed page allows you to arrange the sequences of license embedded data via separators and fields. In order to present data in a consistent format, some bar codes (ex. First Name, Middle Name/Initial, Last Name, Name Suffix, Name Prefix, Birth Date and so on) will return data based on the calculated actual data contained in the ID bar code.



Separators and Additional Fields

Separators and Additional Fields display the characters defined in the Field Settings tabbed page. Combine the Data Elements with Separators can make more clear presentation.

Transmission Sequence

You can configure the Data Elements with , ,  and  button. Click  or  to adjust the sequence of data.

Grid Control

Original Grid Control

When you click a particular text field which requires user input, the Grid Control dialog below shows up. This dialog is available when the scanner interface is set to "Bluetooth SPP Slave/Master", "RS-232", "Wand Emulation", "Direct USB VCOM", or "Direct USB VCOM_CDC".

The Grid Control

| | 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 |

Resulting text :

OK

Clear

Cancel

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

Special Grid Control for Keyboard Interface

The special grid control is available only when "Keyboard Wedge", "Bluetooth HID", "Direct USB HID", or "USB HID" is selected as the scanner interface.

Grid Control — Normal Key

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

The Grid Control

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

Key Type

☐ Scan Code

☒ Normal Key

Key Status

☐ Add Shift

☐ Add Left Ctrl

☐ Add Left Alt

☐ Add Right Ctrl

☐ Add Right Alt

Resulting text :

[\$]

OK

Clear

Cancel

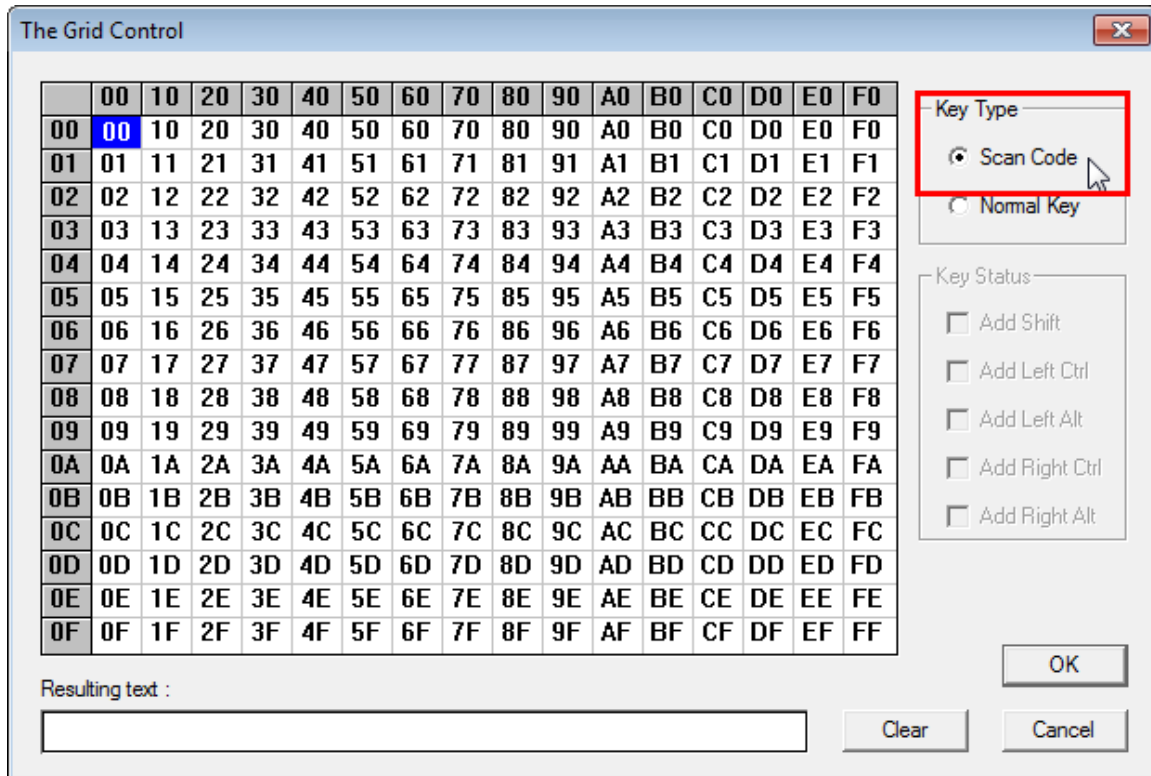
Note: For a TAB character, click "HT".

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.

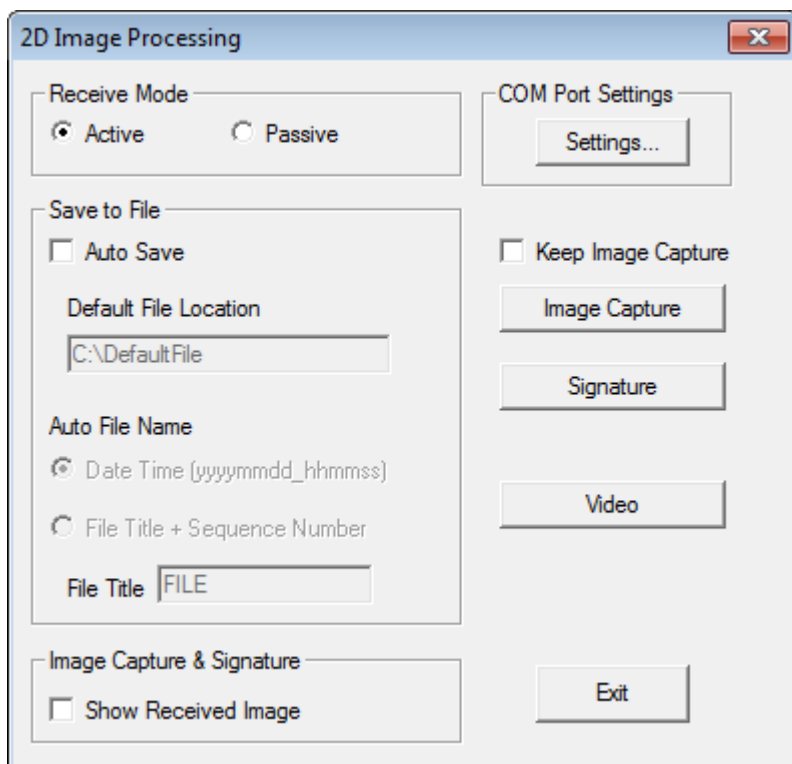
Grid Control — Scan Code

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



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 [1.20 2D Decode Settings \(1704\)](#).



Transmission Properties

Receive Mode

Both active and passive modes are supported.

Active Mode

If selected, the scanner can immediately retrieving image data after clicking the Image Capture, Signature, or Video button.

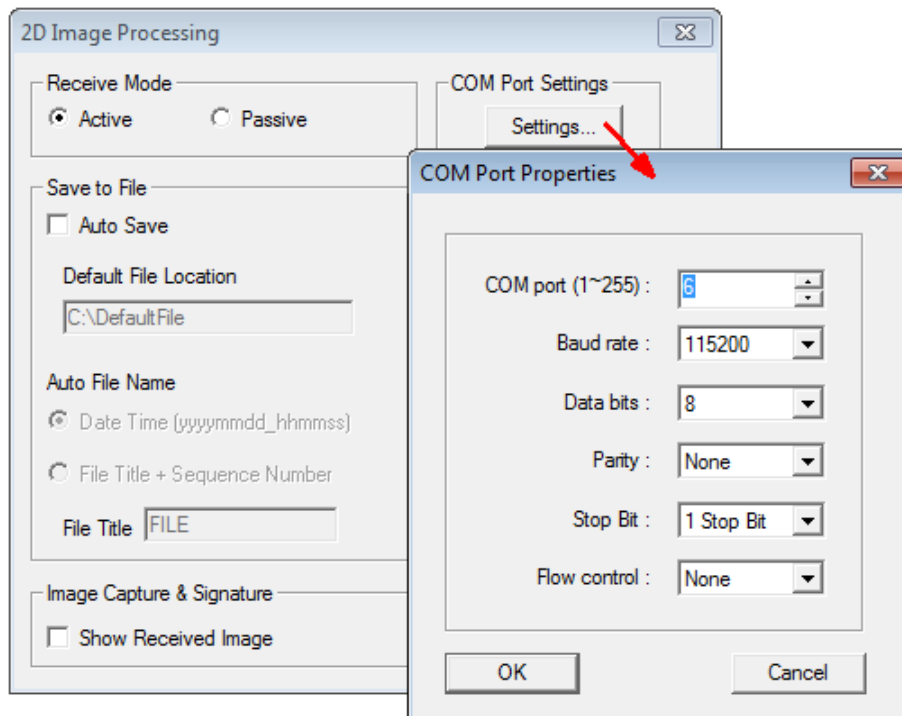
Passive Mode

If selected, the scanner has to read the setup barcodes before retrieving 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 remaining settings.



Save to File

Auto Save

Select the check box so that the system will automatically save the received image/video to a 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". In case of failing to save files to the 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

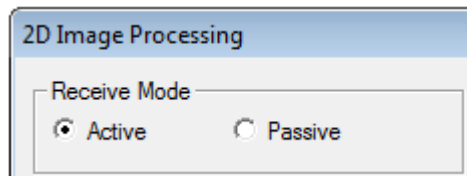
Select the check box so that it will automatically display the image upon completion of receiving image.

Start 2D Image Processing

Retrieving an Image

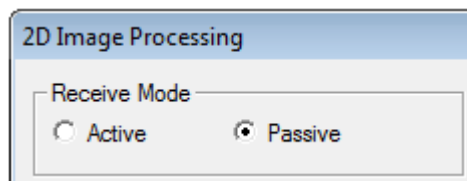
- 1) Click  to start with image processing in Image Mode.
- 2) Depending on the Receive Mode:

Active Mode



If the Active radio button is selected, press the trigger for the scanner to immediately capture and send an image.

Passive Mode



If the Passive radio button is selected, please read the following setup barcodes one by one. With the setup barcodes read, the scanner will then be able to capture the target image and send it to ScanMaster.

Enter Setup



Image Mode



109920

Update

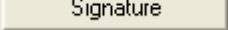


109999

- 3) After ScanMaster finishes the task of receiving an image, the scanner returns to Decode Mode, meaning that you have to click the Image Capture button once for each capturing. For continuous image capture by clicking the button only once, please select the Keep Image Capture check box.

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

If the Active radio button is selected, press the trigger for the scanner to capture and send a signature.

Passive Mode

If the Passive radio button is selected, please read the following setup barcodes one by one. With the setup barcodes read, the scanner will then be able to capture the target signature and send it to ScanMaster.

Enter Setup



Enable Signature
Capture



109922

Update



109999

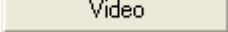
- 3) If signature capture is not desired any more, you may click [Abort] at any time to end the task. Alternatively, you may have the scanner read the setup barcode:

Disable Signature
Capture



109923

Retrieving a Video

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

Active Mode

If the Active radio button is selected, press and hold the trigger for the scanner to take video immediately.

Passive Mode

If the Passive radio button is selected, please 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



109921

Update



109999

- 3) When you release the trigger, the scanner returns to Decode Mode.
You may click [Abort] at any time to end the task.